Internet Civil Defense:

Financial Plan

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Abstract

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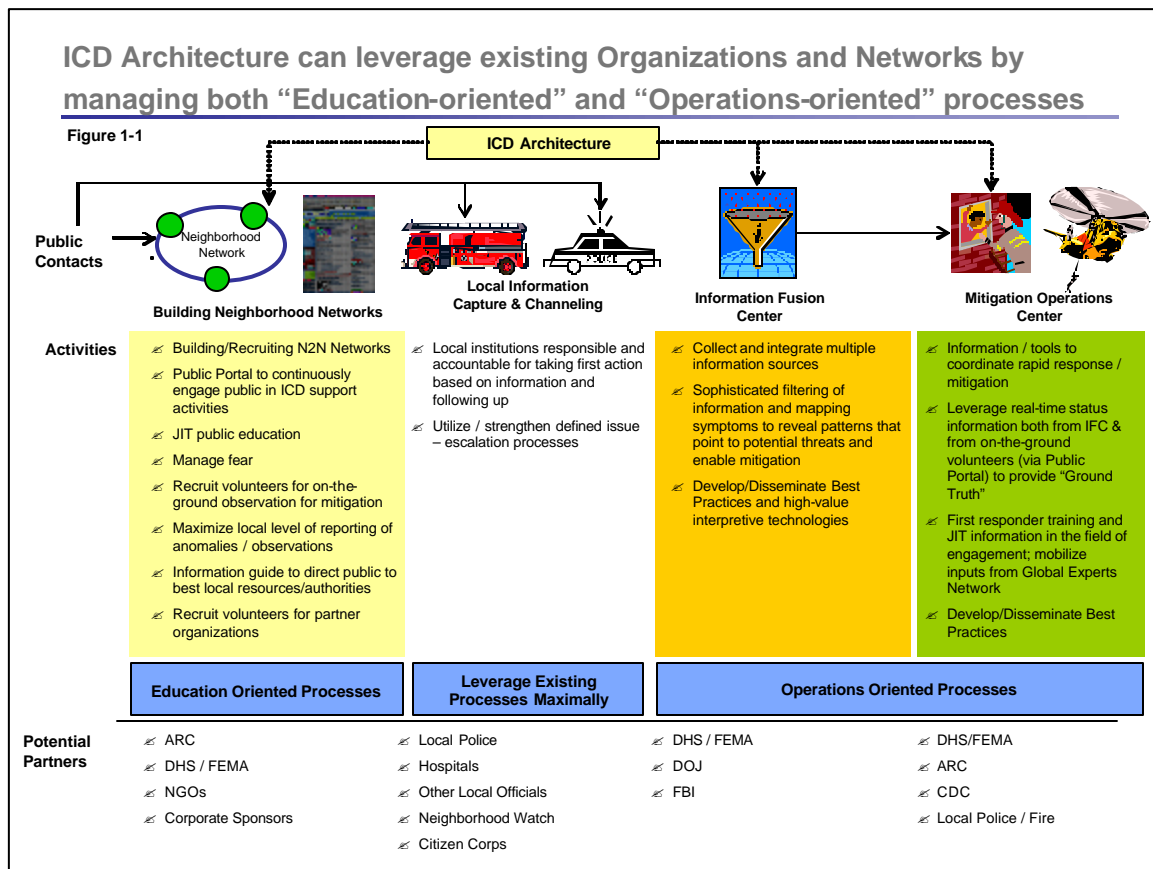**Number of Pages**
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Internet Civil Defense: Financial Plan

I. Background and Objectives

The Internet Civil Defense (ICD) System is designed to substantially enhance national preparedness and response to both terrorism and natural disasters. ICD is a national (and ultimately, international) system of information sharing, education and analysis via the Internet to connect the general public, emergency responders, local and national investigative authorities, and scientific experts and public health officials around the globe in real time for the common purpose of increasing public safety and security.

Development of the ICD Business Plan and Financial Plan is the result of a three-way teaming partnership between DARPA, FEMA, and the American Red Cross (ARC), working together with the Global Health Net (GHNet) Team.

ICD consists of three main modules portrayed in Figure 1-1: Neighborhood Network Building; Information Fusion Center (IFC); and Mitigation Operations Center (MOC).

ICD Architecture can leverage existing Organizations and Networks by managing both "Education-oriented" and "Operations-oriented" processes

Figure 1-1

	Building Neighborhood Networks	Local Information Capture & Channeling	Information Fusion Center	Mitigation Operations Center
Activities	✍ Building/Recruiting N2N Networks ✍ Public Portal to continuously engage public in ICD support activities ✍ JIT public education ✍ Manage fear ✍ Recruit volunteers for on-the-ground observation for mitigation ✍ Maximize local level of reporting of anomalies / observations ✍ Information guide to direct public to best local resources/authorities ✍ Recruit volunteers for partner organizations	✍ Local institutions responsible and accountable for taking first action based on information and following up ✍ Utilize / strengthen defined issue – escalation processes	✍ Collect and integrate multiple information sources ✍ Sophisticated filtering of information and mapping symptoms to reveal patterns that point to potential threats and enable mitigation ✍ Develop/Disseminate Best Practices and high-value interpretive technologies	✍ Information / tools to coordinate rapid response / mitigation ✍ Leverage real-time status information both from IFC & from on-the-ground volunteers (via Public Portal) to provide "Ground Truth" ✍ First responder training and JIT information in the field of engagement; mobilize inputs from Global Experts Network ✍ Develop/Disseminate Best Practices
	Education Oriented Processes	**Leverage Existing Processes Maximally**	**Operations Oriented Processes**	
Potential Partners	✍ ARC ✍ DHS / FEMA ✍ NGOs ✍ Corporate Sponsors	✍ Local Police ✍ Hospitals ✍ Other Local Officials ✍ Neighborhood Watch ✍ Citizen Corps	✍ DHS / FEMA ✍ DOJ ✍ FBI	✍ DHS/FEMA ✍ ARC ✍ CDC ✍ Local Police / Fire

The ICD objectives and Architecture have been described in detail in the **ICD Feasibility Study**. This document assumes that the reader has reviewed and is familiar with the

Feasibility Study. The specific focus of this Financial Plan is to answer several key questions: (1) What would it cost the nation to implement ICD on a national scale?; (2) What is the magnitude of potential benefits in relation to costs?; and (3) What will a significant-scale Pilot Program cost to demonstrate and test the ICD capabilities?

The Financial Plan uses a "bottoms up" cost-estimation approach -- meaning that we build up from about 20-30 cost categories within each of the ICD modules. Using the "bottoms up" approach, the Financial Plan builds up from activity-based costing of specific, identifiable processes. Individual cost categories are derived from discrete activities (such as Call Center operators responding to calls) and from measurable productivities and unit costs associated with each of those activities (for example, annual cost of an Operator in this example). The plan also incorporates an "intermediate" level of detail. Our overall objective is to come within about 25% of actual implementation costs. To illustrate the "intermediate" level of detail, the activity-based costing is reasonable detailed in building up from clearly identifiable capital and expense categories such as: Call Center Operator costs, Analysts costs, Database license fees, Portal development costs, Capital for network servers and PBX systems, Applications development cost and yearly maintenance, Integration software license and maintenance, and the like. However, we don't get fine-grained below that level of detail. So, for example, we have one aggregate category of IFC Analysts with an average, or "typical," fully-loaded cost; an average category of network servers; and so on. Experience shows that this bottoms-up, intermediate-detail approach should be highly indicative for strategic planning and investment purposes.

II.   Matching ICD Costs to Growth Scale

The Feasibility Study presented the objective that to approach critical mass, ICD needs to reach approximately 2M users in its second year, who can potentially serve as on-the-ground observers in their home neighborhoods; plus recruit about 40,000 On-the-Ground Coordinators to support Mitigation operations. Beyond Year 2, ICD is planned to grow to 5M+ users, directly spanning at least 2-3% of the national population, and about 10% of families.

This Financial Plan focuses on the year two objective as a "steady state" level – meaning as a first significant plateau point in building up the ICD network. The plan calculates steady-state costs corresponding to a 2M user "installed base" that is continuing to grow. Year 1 installed base will be significantly lower, probably below 1M users. Therefore, the Financial Plan also calculates a rough Year 1 budget in which all costs associated with building the ICD network – such as Field recruiting activities and Applications development – hold at Year 2 levels. Other cost categories associated with the size of the network (that is, dependent on the installed base of users) are scaled to 50% of year 2 values for conservatism.

As detailed in the report, we've generally used conservative estimates of employee productivities, and we've tried to err on the high side in estimating costs for major items such as Integration software charges and PBX system capital costs. Both for this reason, and because ICD will inevitably exhibit a "learning curve" that will improve productivities with experience, we believe it is likely that the estimated Year 2 costs for 2M users could actually serve at least 3M users by Year 3, and perhaps as many as 4M. Beyond 4M users, costs will probably scale less than proportionately to growth in the installed base; however, we have not estimated formally beyond Year 2. Indeed, ICD should be quite successful by the time it reaches 4M users, and the resulting benefit to the nation from a more extensive network should clearly outweigh the incremental costs.

III.　High-level Cost Categories and Cost Drivers

We want to estimate both what the up-front costs would be to create ICD, and what the ongoing budget requirement would be once the network reaches 2M users "steady state." Therefore, the Financial Model broadly distinguishes 3 types of costs:

- **Upfront Capital (UC)** costs represent initial capital expenditures to launch ICD, such as PBX costs, Portal development costs, and Network server costs. The UC costs would appear on a typical corporate Cash Flow statement under the heading of "Capital Expenditures."

- **Budget Cash (BC) Expenses** are annual cash outlays required as part of the operating budget – for salaries; telecommunications expense; travel and G&A; maintenance of software applications (to keep them current), and similar items.

- **Budget non-cash (BNC) Expenses** represent amortization of capital equipment items from the first category of Upfront Capital (UC). For each item, we have estimated a useful life to use as an amortization period. So, for example, servers and PCs are assumed to be renewed every 3 years. In accounting terms, these non-cash expenses don't affect cash flow. However, with that traditional accounting view, capital has to renewed every several years in "waves." Instead, to smooth out the underlying cost model, and to provide a more indicative picture of ongoing operating requirements, we add together (BC + BNC) to arrive at total annual operating expenses. If, for example, a business (or in this case, ICD) put aside a cash reserve each year equivalent to the non-cash amortization expenses for all capital items, it would be able to continually renew and maintain an existing capital base (assuming zero growth) with no further investment (and with no "waves"). Thus, total operating budget defined in terms of both cash operating costs and renewal investments is the best single measure of ongoing spending needs.

Cost Drivers

Figure 3-1 shows that the key cost drivers are linked to the major infrastructure items in each of the ICD operations. For example, the Neighborhood Network Building will run a major Call Center and e-mail Center that requires trained operators, networks, and PBX system; plus continuous content freshening and applications development for the Public Portal. We've also designated the Neighborhood Network Building process as the "home" of all recruiting expense, including Field Recruiting personnel and PR spending. Neighborhood Network Building will maintain regular contact with the on-the-ground observers network, to ensure their accessibility for mitigation support during a time of crisis.

Resource and Infrastructure Requirements for ICD

Figure 3-1

Neighborhood Network Building

- o Call Center
  - ✎ Operators
  - ✎ Volunteer Observers Network Maintenance personnel
  - ✎ System Administrators
  - ✎ Computers, Software, Telecom Equipment
  - ✎ Office Space
  - ✎ Dedicated Broadband Connections
- o Portal
  - ✎ Upfront Capital & Setup Costs
  - ✎ Maintenance Costs
  - ✎ Content Development & Maintenance Personnel
  - ✎ Application Developers
  - ✎ Other Training Personnel
  - ✎ Market Research Personnel
- o Applications
  - ✎ Development & Rollout
- o Public Training & Accreditation
  - ✎ Development & Education
- o General Hardware / Software
  - ✎ Servers
  - ✎ PBX
  - ✎ Database & Licenses
  - ✎ IT Security
- o Staff Recruiting Costs
- o General & Administrative
  - ✎ Employee Training
  - ✎ Support Staff
  - ✎ Miscellaneous Overhead

Information Fusion Center

- o Fusion Center
  - ✎ Analysts
  - ✎ Systems Administrative Personnel
  - ✎ Computers, Software, Telecom Equipment
  - ✎ Office Space
  - ✎ Dedicated Broadband Connections
- o Portal
- o Analyst Tools
  - ✎ P2P Network Tools
  - ✎ Data mining Tools
- o Interagency Connection and Integration Costs
  - ✎ Integration Tools
  - ✎ Professional Services
  - ✎ Maintenance
  - ✎ IT Security
- o General Hardware / Software
  - ✎ Servers
  - ✎ PBX
  - ✎ Database & Licenses
  - ✎ IT Security
- o Staff Recruiting Costs
- o General & Administrative
  - ✎ Employee Training
  - ✎ Support Staff
  - ✎ Miscellaneous Overhead

Mitigation Operation Center

- o Call / Email Center
  - ✎ Operators
  - ✎ Systems Administrators
  - ✎ Computers, Software, Telecom Equipment
  - ✎ Office Space
  - ✎ Dedicated Broadband Connections
- o Portal
- o First Responder Training
  - ✎ Development & Rollout
- o Applications
  - ✎ Development & Rollout
- o General Hardware / Software
  - ✎ Servers
  - ✎ PBX
  - ✎ Database & Licenses
  - ✎ IT Security
- o Staff Recruiting Costs
- o General & Administrative
  - ✎ Employee Training
  - ✎ Support Staff
  - ✎ Miscellaneous Overhead

The IFC will have a significant population of highly skilled Analysts, so personnel cost will be comparatively high in that operation. IFC will also have extensive database capabilities, supported by a large number of network and individual servers. Applications cost to develop more sophisticated and valuable technologies for Filtering and Integrating Information over time is accounted for in the IFC.

Finally, the MOC will also run a Call Center to interface both with the First Responders and with the On-the-Ground Observers Network. The MOC will maintain the Best Practices database, plus expertise and content collected from the Global Experts Network, and so will also require significant database capability plus network servers. MOC will also develop key applications to support and coordinate response activity.

Sources of Information

We have calibrated the Financial Model using a variety of data sources, generally documented in Appendix 1. For example, Call Center productivities were based on operating experience of ARC in their Falls Church, VA Call Center. Costs of portal development were based on experience of ARC and FEMA, complemented by conversations with a variety of consultants and website developers. Equipment costs for Network servers, App servers, and PBX systems were based on ARC experience; plus

conversations with a number of consultants and vendors (including Oracle, BEA, and HP). Integration software costs were estimated based on discussion with a leading vendor, Mercator Software, plus the authors' general industry experience derived from consulting and Investment Banking work in this segment. IT security costs were based on a "rule of thumb" that emerged from discussions with IT and cyber-security personnel at FEMA – namely, applying 10% premium to all hardware and software costs.

Validation/Demonstration Costs

ICD can launch based on existing technology. This will require solid implementation skills, but no new "inventions." For example, Portal technology, Content Management software for educational materials, push-down e-mails, and Integration Software approaches are already well demonstrated in numerous field applications. Over time, ICD will incorporate more sophisticated technology, especially in the Information Fusion Center (IFC). Therefore, we have generally adopted high-side estimates of individual cost items (such as Portal development costs, or Application development costs) to allow for component validation and integration into the overall ICD system. One or more Pilot Programs will be used to integrate the initial system and to test/validate potential speed and cost of building community-based networks (see ICD Feasibility Study for further discussion; Section IX of this Financial Plan estimates potential costs of Pilot Programs). Advanced technologies for the IFC – such as predictive models, or collaboration tools – will need to be validated before they are incorporated into ICD. Such technologies may also be implemented in a phased approach; so, for example, some IFC Analysts deploy the new technology, while most Analysts continue to use existing technology during the validation period.

IV. Human Resource Requirements

Figure 4-1 shows an example of how human resource requirements were calibrated for first two years of operation (building on principles described in Section II). We calibrated Year 2 resource requirements based on a projected 2M installed base of users to serve, plus 40,000 On-the-Ground Coordinators. For all resource categories required to build up the user base, such as Field Recruiters, Year 1 values were held at the calculated Year 2 requirement. In other words, these resources need to be put in place at a level capable of contributing to grow the installed base starting from Day 1. For those HR categories tied to the cumulative size (vs. growth) of the installed base, Year 1 levels were set at 50% of Year 2 need. Thus, for example, Neighborhood Network Building Call Center Operators start out at 41 in Year, then climb to the Year 2 steady-state level of 82. Similarly, the IFC starts out with 43 Analysts growing to 85, because in the first year of operation, the IFC database will still be getting populated; thus, Analyst requirements are most closely tied to the user base, vs. to the rate of network building. Neighborhood Network Builders are the e-mail operators who maintain contact with the on-the-ground volunteers network; growing from 41 in Year 1 to 82 in Year 2 as the installed base grows.

Buildup of Human Resources from Year 1 to Year 2 Figure 4-1

ICD Employee Buildup Schedule

- ✐ Year 2 is projected to be the beginning of stead-state operations for ICD to serve 2M+ users with Year 1 being a building year
- ✐ In Year 1, only half of the total expected employees with job functions directly related to installed base of ICD network members and partners are hired
- ✐ In Year 2, the remaining half of analysts and operators needed to build networks, field calls and analyze data are hired
- ✐ All other employees, whose jobs are directly involved in the building of the ICD infrastructure, network and applications are hired for ICD to operate at full capacity coming out of the box
- ✐ Such employees are application developers, systems administrators, market researchers, etc.
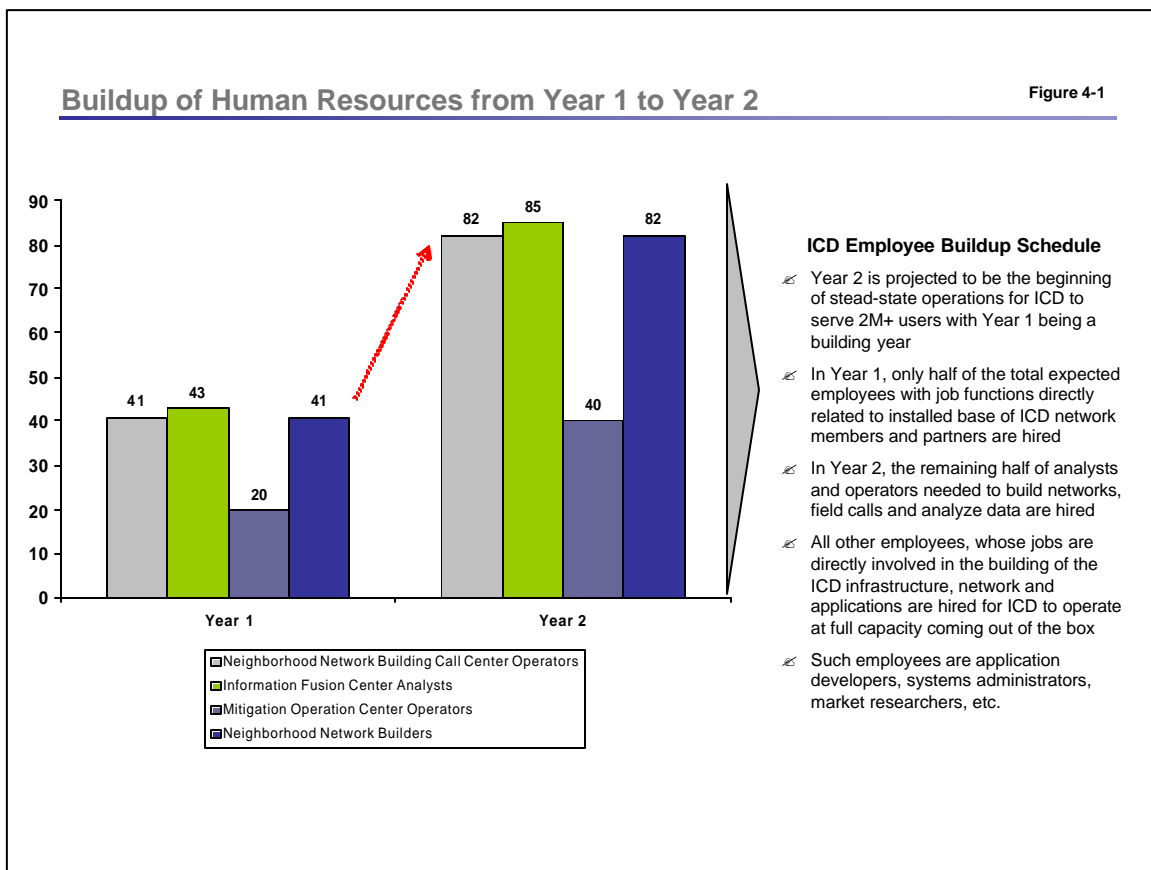
Figure 4-2 shows another dimension of HR requirements: People needs during steady (non-crisis) operations vs. crisis. For each operation, we characterized steady-state needs

based on user base and estimated productivities. We then applied an escalation factor to represent how much a given activity, and the associated resource base, would need to expand during a crisis. For example, for the MOC, we applied a crisis-resourcing factor of 5X, meaning that crisis-period staffing would need to be 500% of steady-state because the MOC would be the direct focal point of field mitigation operations. Other operations were assigned lower resource escalation factors of 200-300%. For example, the number of Analysts in the IFC could grow during a crisis, but not by the same factor as response operations. Assuming that operations over a "typical" year would be 75% steady and 25% crisis, we calculated a weighted-average resource requirement for each HR category. Thus, for example, Call Operators in the MOC start out at 20 but expand to 100 during crisis. The weighted average value is 40 (20*75% +100*25%).

Escalation of Personnel during Steady State & Crisis: Year 2

Figure 4-2

Total Employee Counts for Operators / Analysts During Steady State and Crisis Mode
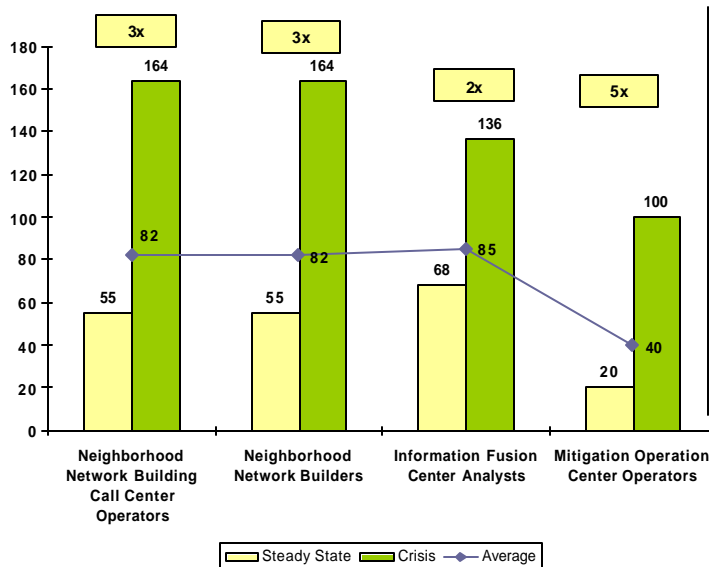
Steady State vs. Crisis Mode

- ✍ It is assumed that ICD operates in a Steady State Mode at 75% of the time and 25% of the time in Crisis Mode
- ✍ To cope with a crisis, ICD will need to quickly increase select staff counts:
  - ✍ Call center operators dealing with neighborhood volunteers at the Neighborhood Network Building and Mitigation Operation Center
  - ✍ Network contact operators dealing with individual communities
- ✍ For each group of employees it is assumed that personnel requirements will jump anywhere between 2x – 5x steady state figures during a crisis
  - ✍ Largest rise in Mitigation Operations Center operators, who are involved in "front line" coordination: 500%
  - ✍ Next largest increase in Neighborhood Network Building Call Center to direct public inquiries & in Network e-mail Operators: 300%
- ✍ Using the 75%/25% breakdown of steady state vs. crisis, an average yearly employee count for each group was calculated

V. Detailed Cost Build-ups

Cost Sheets for each ICD Operation

Figures 5-1 through 5-3 show detailed cost build-up sheets for each of the Neighborhood Network Building, Information Fusion Center (IFC), and Mitigation Operations Center (MOC). The specific assumptions for each cost item are outlined on the Cost Sheets, and Appendix 1 documents major data sources. These cost sheets provide the activity-based detail for the capital and budget summaries that follow.

Neighborhood Network Building Costs

Figure 5-1a

(All $ in thousands)

	Year 1	Year 2
Human Resources Related to Neighborhood Network Building		
Operators in Network Building Call Center	41	82
Content Development Personnel	15	15
Volunteer Observers Network Maintenance Personnel	41	82
Training Personnel for Fear Mgmt. & Public Education	5	5
Field Personnel for Recruiting Communities & Captains	25	25
Market Research Personnel	2	2
R&D Personnel	2	2
Systems Administration Personnel	3	3
	134	216
Fully Loaded Salaries for Each Employee Type		
Operators in Network Building Call Center	35	35
Content Development Personnel	100	100
Volunteer Observers Network Maintenance Personnel	50	50
Training Personnel for Fear Mgmt. & Public Education	100	100
Field Personnel for Recruiting Communities & Captains	100	100
Market Research Personnel	100	100
R&D Personnel	100	100
Systems Administration Personnel	100	100
Total Fully Loaded Salaries for Each Employee Categories		
Operators in Network Building Call Center	1,438	2,877
Content Development Personnel	1,500	1,500
Volunteer Observers Network Maintenance Personnel	2,055	4,110
Training Personnel for Fear Mgmt. & Public Education	500	500
Field Personnel for Recruiting Communities & Captains	2,500	2,500
Market Research Personnel	200	200
R&D Personnel	200	200
Systems Administration Personnel	300	300
BC **Total Fully Loaded Salaries for Employees**	**$8,693**	**$12,186**
Human Resource Additions		
Operators in Network Building Call Center	41	41
Content Development Personnel	15	-
Network Maintenance Personnel	41	41
Training Personnel for Fear Management & Public Educ	5	-
Field Personnel for Recruiting Communities & Captains	25	-
Market Research Personnel	2	-
R&D Personnel	2	-
Systems Administration Personnel	3	-
	134	82

		Year 1	Year 2
General Recruiting Costs / Employee Type	10.0%	Year 1	Year 2
Operators in Network Building Call Center		3.5	3.5
Content Development Personnel		10.0	10.0
Volunteer Observers Network Maintenance Personnel		5.0	5.0
Training Personnel for Fear Mgmt. & Public Education		10.0	10.0
Field Personnel for Recruiting Communities & Captains		10.0	10.0
Market Research Personnel		10.0	10.0
R&D Personnel		10.0	10.0
Systems Administration Personnel		10.0	10.0
Total Cost of Recruiting			
Operators		144	144
Non-Operators		520	0
BC Network Maintenance Personnel		205	205
Total Cost of Recruiting		**$869**	**$349**
Cost of Equipment for Employees & Related Expenses			
Computers		1.5	1.5
Software		0.5	0.5
Telecom / Network Equipment		1.0	1.0
Startup Equipment Cost per Worker		3.0	3.0
Total Employees Added		134	82
UC Total Equipment Cost		**$403**	**$247**
BNC Depreciation & Amortization (3 Year Period)		**$134**	**$216**
BC Total Security Cost for Equipment	10.0%	**$40**	**$65**
General Telecom Costs			
Average Telecom Cost / Operator		2.0	2.0
Total Number of Operators		41	82
BC Total Operator Telecom Cost		**$82**	**$164**
Average Telecom Cost / Non-Operator		1.0	1.0
Total Number of Non-Operators		93	134
BC Total Non-Operator Telecom Cost		**$93**	**$134**
Application Server Costs			
App Server Cost / CPU License		10	10
Total Licenses		5	5
Total Cost of App Server Licenses		**$50**	**$50**

Neighborhood Network Building Costs, continued

Figure 5-1b

(All $ in thousands)

	Network Server Costs		Year 1	Year 2
	Network Servers		25	
	Cost / Server		15	
UC	Total Cost of Network Servers		$375	
BNC	Depreciation & Amortization (3 Year Period)		$125	$125
BC	Total Security Cost for Servers	10.0%	$38	$38

	Database Costs			
UC	Upfront Cost for Database (e.g. Oracle)		$200	
BC	Ongoing Data Base Maintenance Cost	20.0%	$40	$40
	Database Cost / CPU License		40	40
	Total Licenses		135	226
BC	Total Cost of DB Licenses		$5,400	$9,040

	Office Space Costs			
	Office Space Cost / Sq. Foot / Month		1.50	1.50
	Total Sq. Foot of Office Space (in 000's)		80	80
BC	Cost of Yearly Office Space		$1,440	$1,440

	Training & Accreditation Programs			
	Number of Programs / Year		2	2
	Cost / Program		60	60
BC	Total Training Program Costs		$120	$120
BC	Maintenance for Training Programs	20.0%	$24	$24
BC	Security Cost for Training	10.0%	$12	$12

	Applications		Year 1	Year 2
	Number of Rollouts / Year		4	4
	Development Costs / Rollout		250	250
BC	Total Applications Costs		$1,000	$1,000
BC	Maintenance for Applications	20.0%	$200	$200
BC	Security Cost for Applications	10.0%	$100	$100

	Public Portal Expenses			
UC	Portal Development Cost		$5,000	
BC	Portal Maintenance Costs	20.0%	$1,000	$1,000
BC	Portal Hosting Cost	20.0%	$1,000	$1,000

	Other General & Administrative Expenses			
BC	Promotional Costs		$500	$500
BC	G&A Costs (15% of Total Employee Salaries)	15.0%	$1,304	$1,828
BC	Training Costs (4% of HR Costs)	4.0%	$348	$487
BC	Total Other General Expenses		$2,152	$2,815

	PBX System			
UC	PBX System		$1,000.0	
BC	Maintenance on PBX System	20.0%	$200.0	$200.0
BC	Security on PBX System	10.0%	$100.0	$100.0
BNC	D&A On PBX System		$333.3	$333.3

Miscellaneous Infrastructure Costs - Racks, Back Tape, Routers and etc.

UC	Additional Infrastructure Equipment		$250	

Summary of Neighborhood Network Building Development Costs

	Year 1	Year 2
Total Upfront Capital (UC)	$7,228	$247
Total Budget: Cash Expense (BC)	$22,653	$30,078
Total Budget: Non-Cash Expense (BNC)	$593	$675

Note: Non-Cash Expenses (BNC) represent average reinvestment values for equipment that depreciates over the course of the year. From an accounting standpoint, depreciation is a non-cash expense. However, creating an annual reserve equal to the amount of the non-cash expense would continually renew the equipment base at current level of operations (with no further required capital investment).

Information Fusion Center Costs

Figure 5-2a

(All $ in thousands)		Year 1	Year 2			Year 1	Year 2
Human Resources Related to Information Fusion Center					**Analyst Network Connection Costs**		
Number of Fusion Center Analysts		43	85		Network Connection / Analyst & Employee	2.0	2.0
Systems Administration Personnel		3	3		Total Employees	46	88
		46	88	BC	Total Network Connection Costs	$91	$176
Fully Loaded Salaries for Each Employee Type					**Network Server Costs**		
Fusion Center Analysts		200	200		Network Servers	25	
Systems Administration Personnel		100	100		Cost / Server	15	
Total Fully Loaded Salaries for Each Employee Categories				UC	Total Cost of Network Servers	$375	
Fusion Center Analysts		8,500	17,000	BNC	Depreciation & Amortization (3 Year Period)	$125	$125
Systems Administration Personnel		300	300	BC	Total Security Cost for Servers	10.0% $38	$38
BC Total Fully Loaded Salaries for Employees		$8,800	$17,300				
					Database Costs		
Human Resource Additions				UC	Upfront Cost for Database (e.g. Oracle)	$500	
Fusion Center Analysts		43	43	BC	Ongoing Data Base Maintenance Cost	20.0% $100	$100
Systems Administration Personnel		3	0		Database Cost / CPU License	60	60
		46	43		Total Licenses	45	95
General Recruiting Costs				BC	Total Cost of DB Licenses	$2,700	$5,700
Number of New Analysts		43	43				
Recruiting Cost / Analyst	10.0%	20	20		**Cost of Datamining Tools**		
BC Total Cost of Analyst Recruiting		$850	$850		Datamining Costs / CPU License	20	20
Number of New Systems Administrators		3	0		Total Licenses for Fusion Center	45	95
Recruiting Cost / Analyst	10.0%	10	10	BC	Total Cost of Datamining Tools	$900	$1,900
BC Total Cost of Administrator Recruiting		$30	$0				
					P2P Tools		
Employee Annual Telecom Costs					P2P Tools / CPU License	2.0	2.0
General Telecom Costs / Employee		1.0	1.0		Total Licenses for Fusion Center	45.0	95.0
Total Number of Employees		46	88	BC	Total Cost of P2P Tools	$90	$190
BC Total Annual Telecom Costs		$46	$88				
					Office Space		
Cost of Equipment for Employees & Related Expenses					Office Space Cost / Sq. Foot / Month	$1.50	$1.50
Computers		10.0	10.0		Total Sq. Foot of Office Space (in 000's)	60	60
Software		5.0	5.0	BC	Yearly Cost of Office Space	$1,080	$1,080
Telecom / Network Equipment		1.0	1.0				
Startup Equipment Cost per Worker		16.0	16.0		**Application Server Costs**		
Total Employees Added		46	43		App Server Cost / CPU License	10	10
UC Total Equipment Cost		$728	$680		Total Licenses	10	10
BNC Depreciation & Amortization (3 Year Period)		$243	$469	BC	Total Cost of App Server Licenses	$100	$100
BC Total Security Cost for Equipment	10.0%	$73	$141				

Information Fusion Center Costs, continued

Figure 5-2b

(All $ in thousands)

	Inter-Agency Integration Costs		Year 1	Year 2
	Number of Connections		15	
	Cost / Integrated Connection		400	
UC	Total Integration Costs		$6,000	
BNC	D&A for Integrated Connections		$2,000	$2,000
BC	Maintenance Cost / Connection	20.0%	$1,200	$1,200
BC	Security for Each Connection	10.0%	$600	$600
	Dedicated Telecom Connections		15	15
	Cost / Connection		10	10
BC	Total Telecom Connection Costs		$150	$150
UC	Professional Service for Integration ($100K/Agency)		$1,500	$0
BC	Maintenance Cost for Professional Service	20.0%	$300	$300
	Applications Costs			
	Number of Rollouts / Year (1st Four Years)		2	2
	Development Costs / Rollout		2,000	2,000
	Maintenance Cost / Application	20.0%	800	800
BC	Total Applications Costs		$5,600	$5,600
BC	Security for Applications	10.0%	$400	$400
	Internal Portal Expenses			
UC	Cost of Internal Portal		$2,000	
BC	Portal Maintenance	20.0%	$400	$400
BC	Portal Hosting	20.0%	$400	$400
	Other General & Administrative Expenses			
BC	General & Administrative	12.0%	$1,056	$2,076
BC	Training Costs	4.0%	$352	$692
	PBX System			
UC	PBX System		$1,000.0	
BC	Maintenance on PBX System	20.0%	$200.0	$200.0
BC	Security on PBX System	10.0%	$100.0	$100.0
BNC	D&A On PBX System		$333.3	$333.3
	Miscellaneous Infrastructure Costs - Racks, Back Tape, Routers and etc.			
UC	Additional Infrastructure Equipment		$250	

Summary of Information Fusion Center Costs	Year 1	Year 2
Total Upfront Capital (UC)	$12,353	$680
Total Budget: Cash Expense (BC)	$25,655	$39,780
Total Budget: Non-Cash Expense (BNC)	$2,701	$2,928

Note: Non-Cash Expenses (BNC) represent average reinvestment values for equipment that depreciates over the course of the year. From an accounting standpoint, depreciation is a non-cash expense. However, creating an annual reserve equal to the amount of the non-cash expense would continually renew the equipment base at current level of operations (with no further required capital investment).

Mitigation Operation Center Costs

Figure 5-3a

(All $ in thousands)	Year 1	Year 2			Year 1	Year 2
Human Resources Related to Mitigation Operation Center				**Equipment Cost / Employee**		
Call Center Operators	20	40		Computers	1.5	1.5
Long-Term Health Tracking Personnel	3	3		Software	0.5	0.5
Systems Administration Personnel	5	5		Telecom / Network Equipment	1.0	1.0
	28	48		Network & Equipment Costs / Operator	3.0	3.0
				Total Number New Employees	28	20
			UC	Total Equipment Cost for New Employees	$84	$60
Fully Loaded Salaries for Each Employee Type			BNC	Depreciation & Amortization (3 Year Period)	$28	$48
Call Center Operators	75	75	BC	Total Security Cost for Equipment 10.0%	$8	$14
Long-Term Health Tracking Personnel	100	100				
Systems Administration Personnel	100	100		**General Telecom Costs**		
				Average Telecom Cost / Operator	2.0	2.0
				Total Number of Operators	20	40
Total Fully Loaded Salaries for Each Employee Categories			BC	Total Operator Telecom Cost	$40	$80
Call Center Operators	1,500	3,000				
Long-Term Health Tracking Personnel	300	300		Average Telecom Cost / Non-Operator	1.0	1.0
Systems Administration Personnel	500	500		Total Number of Non-Operators	8	8
BC Total Fully Loaded Salaries	$2,300	$3,800	BC	Total Non-Operator Telecom Cost	$8	$8
Human Resource Additions				**Network Server Costs**		
Call Center Operators	20	20		Network Servers	25	
Long-Term Health Tracking Personnel	3	-		Cost / Server	15	
Systems Administration Personnel	5	-	UC	Total Cost of Network Servers	$375	
	28	20	BNC	Depreciation & Amortization (3 Year Period)	$125	$125
			BC	Total Security Cost for Servers 10.0%	$38	$38
General Recruiting Costs / Employee Type 10.0%				**Database Costs**		
			UC	Upfront Cost for Database (e.g. Oracle)	$300	
Call Center Operators	7.5	7.5	BC	Annual Maintenance Costs 30.0%	$90	$90
Long-Term Health Tracking Personnel	10.0	10.0		Database Cost / CPU License	40	40
Systems Administration Personnel	10.0	10.0		Total Licenses	20	49
			BC	Total Cost of DB Licenses	$800	$1,960
Total Cost of Recruiting				**Office Space Costs**		
Call Center Operators	150	150		Office Space Cost / Sq. Foot / Month	$1.50	$1.50
Long-Term Health Tracking Personnel	30	-		Total Sq. Foot of Office Space (in 000's)	30	30
Systems Administration Personnel	50	-	BC	Yearly Office Space	$540	$540
BC Total Recruiting Costs	$230	$150				

Mitigation Operation Center Costs, continued

Figure 5-3b

(All $ in thousands)

	First Responder Training Costs		Year 1	Year 2
BC	Cost for Development		$250	$250
BC	Maintenance of Training Program	20.0%	$50	$50
BC	Security Cost for Training Applications	10.0%	$25	$25
	Applications			
	Number of Rollouts / Year		2	2
	Development Costs / Rollout		1,000	1,000
BC	Total Applications Costs		$2,000	$2,000
BC	Maintenance of Applications	20.0%	$400	$400
BC	Security Cost for Applications	10.0%	$200	$200
	Application Server Costs			
	App Server Cost / CPU License		10	10
	Total Licenses		5	5
BC	Total Cost of App Server Licenses		$50	$50
	Internal Portal Expenses			
UC	Portal Development Cost		$3,000	
BC	Portal Maintenance Costs	20.0%	$600	$600
BC	Portal Hosting Cost	20.0%	$600	$600
	Other General & Administrative Expenses			
BC	G&A Costs (15% of Total Employee Salaries)	15.0%	$345	$570
BC	Training Costs (4% of HR Costs)	4.0%	$92	$152
	PBX System			
UC	PBX System		$1,000.0	
BC	Maintenance on PBX System	20.0%	$200.0	$200.0
BC	Security on PBX System	10.0%	$100.0	$100.0
BNC	D&A On PBX System		$333.3	$333.3
	Miscellaneous Infrastructure Costs - Racks, Back Tape, Routers and etc.			
UC	Additional Infrastructure Equipment		$250	

Summary of Mitigation Operation Center Costs	Year 1	Year 2
Total Upfront Capital (UC)	$5,009	$60
Total Budget: Cash Expense (BC)	$8,966	$11,877
Total Budget: Non-Cash Expense (BNC)	$486	$506

Note: Non-Cash Expenses (BNC) represent average reinvestment values for equipment that depreciates over the course of the year. From an accounting standpoint, depreciation is a non-cash expense. However, creating an annual reserve equal to the amount of the non-cash expense would continually renew the equipment base at current level of operations (with no further required capital investment).

Preview of Potential ICD Costs

Figure 5-4 previews the potential costs of rolling ICD out on a national basis. Total Upfront Capital (UC) is almost $25M, with half of that concentrated in the IFC. As seen later, the biggest single capital item is purchase of integration software to link about 15 diverse government agencies into the IFC. The Neighborhood Network Building process requires approximately $7M of capital, with the largest single item being up-front development of the software for a world-class website, including content management features, App servers, and facility for "push-down" content to the ICD user community across the nation's neighborhoods. The MOC requires about $5M of initial capital, mainly for a portal to coordinate first responder communications, including interaction with the On-the-Ground volunteer network and Global Experts Network, plus a PBX system for the MOC Call Center.

ICD Capital Requirements and Operating Budget have been estimated using a detailed "bottom up" Activity-based Costing Model

Figure 5-4

(All $ in thousands)

| $24M in Up-front Capital to launch ICD | $85M/yr. ongoing Operating Budget including Network Building, Information Fusion & Mitigation Operations |

$90,000
$80,000
$70,000
$60,000
$50,000
$40,000
$30,000
$20,000
$10,000
$-

$7,228 — Neighborhood Network Building UC
$12,353 — Information Fusion Center UC
$5,009 — Mitigation Operation Center UC
$24,590 — Total Upfront Capital

$30,078 — Neighborhood Network Building BC
$39,780 — Information Fusion Center BC
$11,877 — Mitigation Operation Center BC
$4,109 — Total BNC
$85,844 — Total Cash Total Year 2 BC & BNC
$61,054 — Total Year 1 BC &BNC

New DHS mission subsumes IFC & select other ICD activities … spanning >50% of total ICD costs

Key: UC=Upfront Capital; BC=Budget Cash Expenses; BNC=Budget Non-Cash Expenses (Amortized Capital)

The projected annual budget requirement to fully implement ICD in Year 2 is approximately $86M, with around $61M required in the first year of launch. Out of this total, the IFC annual budget is roughly $40M – of which the largest component is Analyst salaries and related personnel expense -- plus $30M for Neighborhood Network Building and approximately $12M for the MOC. Non-cash amortization expenses are only $4M/yr. because we've accounted for annual maintenance of the largest total capital items – the three portals covering all of the operations, and the integration software – as part of the annual cash budget. This renewal expense is 20%/yr. of the up-front portals' cost – meaning that each portal is fully renewed every 5 years. Non-cash amortization, therefore, mainly represents renewal investment for network servers and other equipment, generally with a three-year replacement life.

Overview of Neighborhood Network Building Capital Requirements and Expense

Figure 5-5 summarizes the drivers of the Neighborhood Network Building up-front capital of just over $7M. The dominant need is for a world-class portal to manage content and interface with the public, including the Information Referral Guide. We've estimated the portal cost at $5M to be conservative, based on feedback on development cost for a number of substantial existing portals (including ARC, Time Warner, and others). The next largest capital item is $1M for a high-capacity, flexible PBX system, consistent with ARC experience. The final capital items involve computers for Call Center Operators,

and network servers, plus associated equipment (routers, racks, tape back-ups, and similar items).

Buildup of Upfront Capital for Neighborhood Network Building

(All $ in thousands)
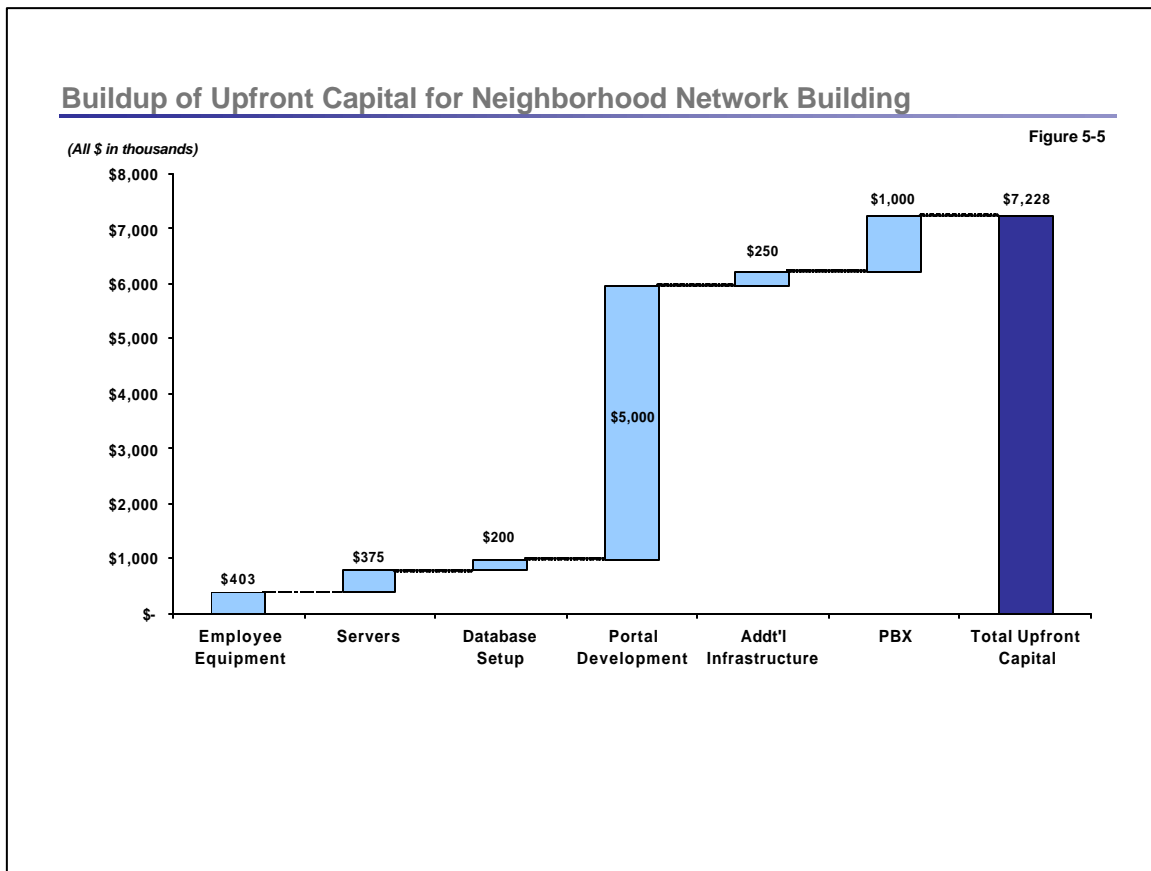
Figure 5-5

Figure 5-6 portrays the build-up of annual operating budget of $30M for Neighborhood Network Building, with $22.7M required in the first year of operation (displayed in the bar at the far right of the figure). The largest single expense item is fully-loaded costs for Call Center Operators, Network Maintenance Personnel, Content Developers, Field Recruiters, and other personnel associated with Neighborhood Network Building operations. Database license costs of $9.1M are the next largest item – since this operation will maintain the database on contact information for all on-the-ground observers; followed by $2.8M for G&A plus Training, and $2M for Portal maintenance and hosting. Annual Applications Development expense of $1.2M/yr. and Office space expenses of $1.4M/yr. are the only other cost items above $1M/yr.

Buildup of Second Year Budget for Neighborhood Network Building & Total First Year Budget

Figure 5-6

(All $ in thousands)

Values (left to right): $12,186 (FL_Salaries); $349 (Recruiting Costs); $299 (General Telecom Costs); $9,080 (Database); $1,440 (Office Space); $144 (Training / Accreditation); $1,200 (Applications); $2,000 (Portal Maintenance / Hosing); $2,815 (G&A / Training); $314 (IT Security); $50 (App Servers); $200 (PBX Maintenance); $30,078 (Total 2nd Year BC); $22,653 (Total 1st Year BC)
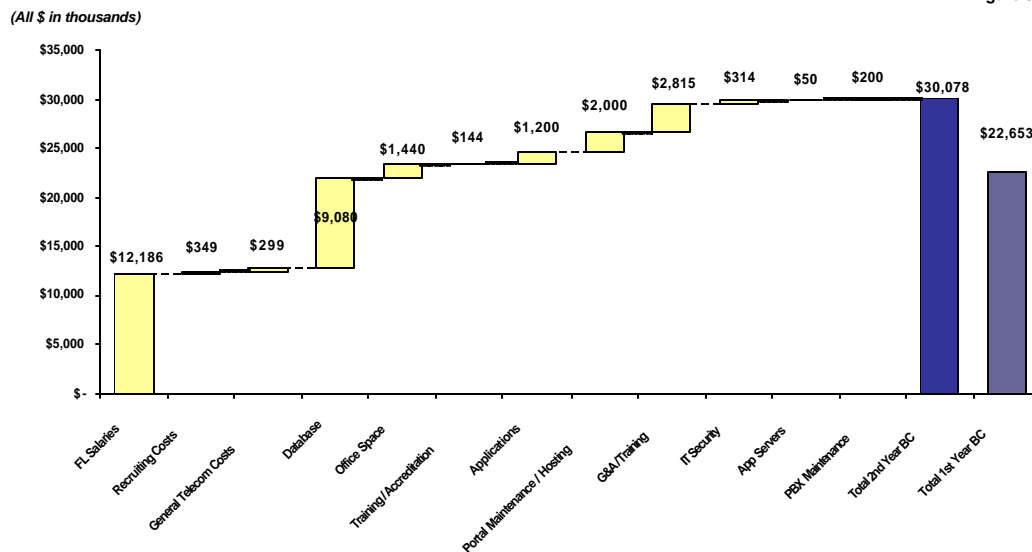
Overview of IFC Capital Requirements and Expense

Figure 5-7 shows the determinants of $12M in up-front capital for the IFC. The major item is Integration software, including professional services, to link approximately 15 different agencies from inception of IFC, with a total cost of $7.5M. A moderately sophisticated portal, priced out at $2M, will be needed to exchange data and analyses among Analysts involved with the IFC, including across Agencies. Other capital items involve: PBX; up-front database set-up and configuration; computer equipment including network servers; and miscellaneous infrastructure equipment.

Buildup of Upfront Capital for Information Fusion Center

Figure 5-7

(All $ in thousands)

Employee Equipment: $728
Servers: $375
Database Setup: $500
Interagency Integration: $7,500
Portal: $2,000
Addt'l Infrastructure: $250
PBX: $1,000
Total Upfront Capital: $12,353
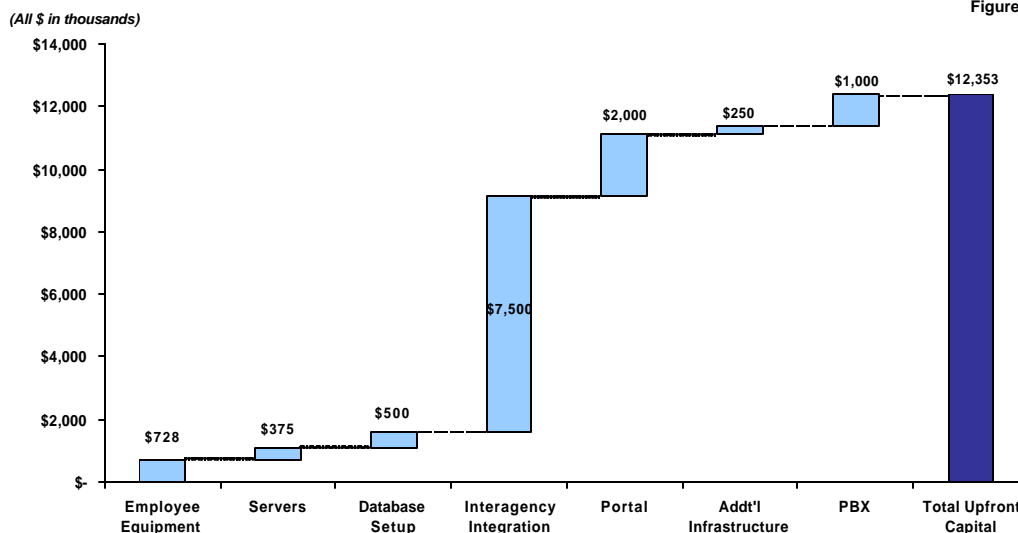
Figure 5-8 portrays the build-up of nearly $40M annual operating budget for IFC, compared to which $25.7M would be required in Year 1. Fully-loaded employee costs for 85 Analysts are the major expense category, yielding the $17.3M/yr. employee cost. Database licenses run $5.8M/yr., since IFC operations will be highly data-intensive, and also involve diverse Analyst teams. Applications cost of $5.6M/yr. should allow for developing two major new analytical tools per year plus ongoing maintenance and modernization once developed. Training plus G&A expense total $2.8M/yr. Other significant operating expenses include: $1.9M/yr. for data mining tools; $1.3M/yr for IT security; and $1.1M/yr. for leased space. Smaller expense items include Recruiting costs, Portal maintenance and hosting, and P2P tools.

Buildup of Second Year Budget for Information Fusion Center & Total First Year Budget

Figure 5-8

(All $ in thousands)

Categories (left to right): FL Salaries $17,300; Recruiting Costs $850; Telecom $88; Network Connection $176; Database $5,800; Datamining Tools $1,900; P2P Tools $190; Office Space $1,080; Interagency Integration $1,650; Applications $5,600; Portal $800; G&A / Training $2,768; IT Security $1,278; App Servers $100; PBX Maintenance $200; Total 2nd Year BC $39,780; Total 1st Year BC $25,655

Overview of MOC Capital Requirements and Expense

The waterfall chart in Figure 5-9 displays the drivers of $5M in up-front capital for MOC. Portal development is the largest single item, $3M, since the MOC will require a reasonably sophisticated internal/external portal to interface with the on-the-ground volunteers and with the Global Experts Network. Other capital items entail $1M for a sophisticated PBX system and various categories of computer and network equipment.

Buildup of Upfront Capital for Mitigation Operation Center

Figure 5-9

(All $ in thousands)
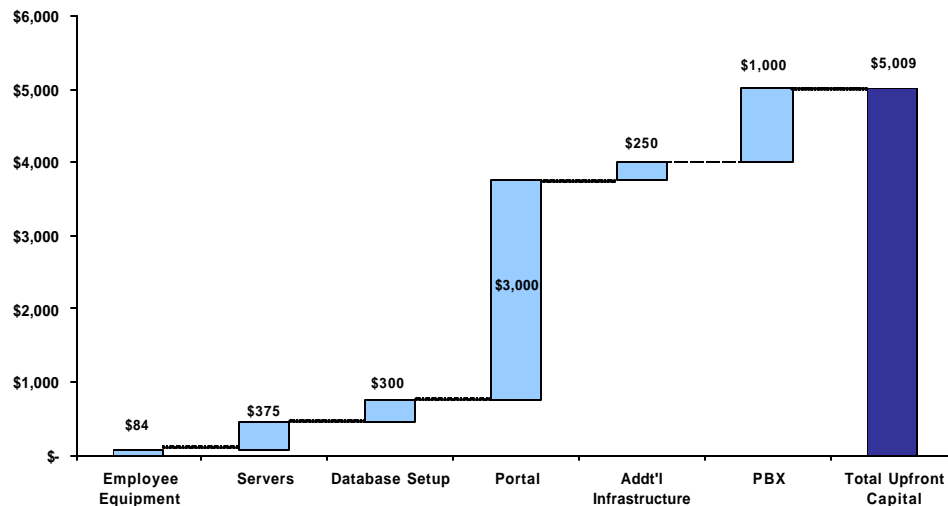
The annual MOC budget is projected to run at approximately $12M/yr., as shown in Figure 5-10, with first-year expense of nearly $9.0M. Fully-loaded salaries of $3.8M/yr. cover 40 Call Center Operators, plus System Administrators and long-term Health-tracking personnel. Annual Applications Development expense of $2.4M/yr. should enable creation, and subsequent maintenance, of two substantial new tools per year to enhance coordination and safety of first responders. Database licenses are expected to run around $2.0M/yr because the MOC will maintain a variety of databases, including Best Practices, Observer Network contacts (coordinating with Neighborhood Network Building), and Public Health. Other significant cost items are for: Portal maintenance and hosting ($1.2M/yr); Office space ($.54M/yr.); Training and G&A ($0.7M/yr.); IT Security cost; and Recruiting cost.

Buildup of Second Year Budget for Mitigation Operation Center & Total First Year Budget

Figure 5-10

(All $ in thousands)
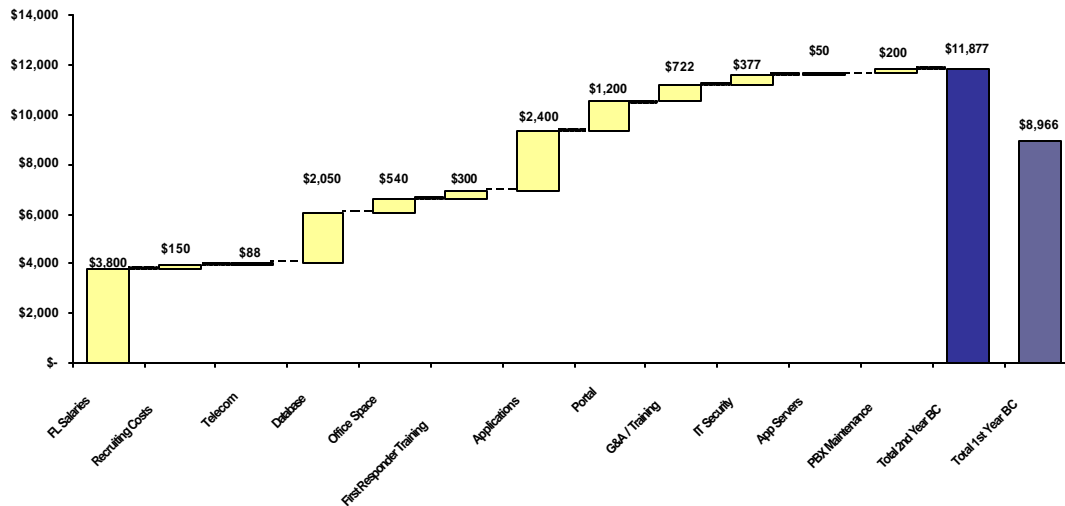
Sensitivity of Total Operating Costs to Crisis % of Time

The ICD "Base Case" presented above assumes that the ICD system operates in "stand-by" mode 75% of the time and in "crisis mode" 25% of the time. How do total operating costs change if the Crisis % of time is higher or lower?

Figure 5-11 shows how total staffing and operating budget for Neighborhood Network Building vary up and down as the Crisis % of time rises or falls. For example, required personnel climb from 164 to 186 if the Crisis % grows to 35% (from 25%); and drop to 142 if the Crisis % is only 15% in a given year. The operating budget for Network Building changes less than proportionately to the level of staffing since, for example, staff costs only account for about 40% of the total operating budget in this segment.

Neighborhood Network Building Escalation of Personnel and Operating Budget at Various Crisis Operation Levels

Figure 5-11

(All $ in thousands)

Operating Budget and Personnel Requirements at Various Crisis State Levels
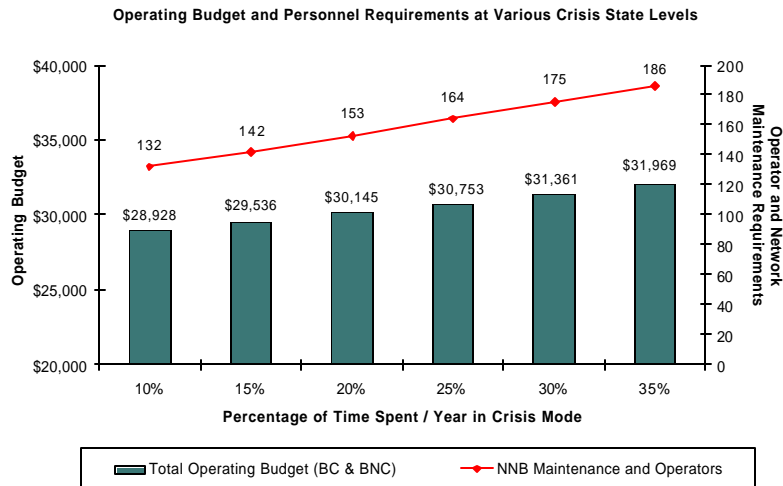
Note: Operating Budget consists of Budget Cash Expense (BC) and Non Cash Expense (BNC)

Figure 5-12 summarizes impact on the overall ICD operating budget. Each 5% variation in the Crisis % of time changes the operating budget by about $2M/yr. Thus, for example, if the Crisis % rises to 35% (representing 2 increments of 5% each), operating budget grows from around $85.8M to $89.5M/yr. Reciprocally, if in a relatively "calm" year, Crisis % is only 15%, operating budget drops toward $82M/yr. The ICD overall budget contains a relatively high level of "fixed" expenses that don't depend materially on crisis vs. non-crisis activity – such as Applications development, Database costs, and Best Practices collection – that tend to insulate the overall budget change vs. crisis operation time.

Overall Buildup of Operating Expense at Various Crisis Operation Levels

Figure 5-12

(All $ in thousands)

Operating Budget Escalation at Various Crisis State Levels

Percentage of Time Spent / Year in Crisis Mode

Legend: NNB Operating Budget · IFC Operating Budget · MOC Operating Budget

Percentage	Total	MOC	IFC	NNB
10%	$80,294	$11,228	$40,138	$28,928
15%	$82,144	$11,613	$40,995	$29,536
20%	$83,994	$11,998	$41,851	$30,145
25%	$85,844	$12,383	$42,708	$30,753
30%	$87,694	$12,768	$43,565	$31,361
35%	$89,544	$13,154	$44,421	$31,969
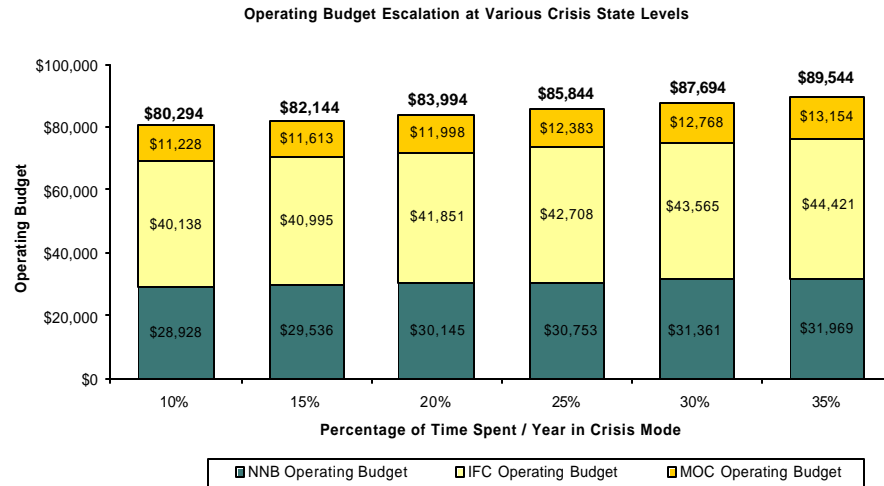
Note: Operating Budget consists of Budget Cash Expense (BC) and Non Cash Expense (BNC)

VI. Calculating Total and Incremental ICD Costs

We believe it is useful to view ICD not as an "incremental" expense for the Nation, but as a key contributor to the mission of DHS and to fulfill the President's objectives for Homeland Security and Emergency Management. Thus, for example, creating the Public Portal (within Neighborhood Network Building) is one mechanism to achieve the "single voice" through which DHS will be charged to communicate with the public about emergencies. Similarly, the IFC will help to fulfill DHS' role to integrate information emanating from the public and from multiple government agencies. And the MOC can help to elevate first responder training, Best Practices, mitigation speed and flexibility, and overall readiness.

For these reasons, we have designated the IFC as belonging fully to the purview of DHS. Only DHS (or a government agency with a similarly-designated mission) can fulfill the role of information sharing across agencies, and resulting information fusion, that the President has called for. Similarly, we believe it is reasonable to allocate a smaller % -- we've picked 20-40% -- of both Neighborhood Network Building and the MOC to "base case" DHS; meaning that those expenditures would be required in any event, independent of existence of ICD, to fulfill the DHS roles in coordinated national communications and response activity.

Figure 6-1 quantifies this argument by calculating that $8.6-17.3M/yr. of the ICD budget for NNB and MOC overlaps heavily with planned DHS responsibilities, plus the $43M/yr. budget for the IFC ($40M cash budget, plus $3M of amortized expense; see Figure 5-2(b)), for a total of $51-59M/yr. That leaves $26-35M/yr. as the potential true "incremental" cost of ICD to the Nation.

Incremental Costs of ICD to the Nation are estimated at $26-35M, beyond requirements for new DHS Mission

Figure 6-1

(All $ in thousands)

Waterfall chart:

- Total ICD Budget: $85,844
- IFC Budget Allocation: $42,708
- MOC Budget Allocation Range: $2,477 / $2,477
- NNB Budget Allocation Range: $6,151 / $6,151
- Incremental Annual Costs to ICD: $34,508; $8,628; $25,880
- Total DHS Allocation of BC & BNC: $59,964; $51,336; $8,628

Possible Allocation of MOC and NNB: $8,628-$17,256

Total Possible Allocation of ICD Budget to DHS: $51,336-$59,964

Net Incremental Cost to Nation: $25,880-$34,508

Y-axis: $0, $10,000, $20,000, $30,000, $40,000, $50,000, $60,000, $70,000, $80,000, $90,000

X-axis categories: Total ICD Budget | IFC Budget Allocation | MOC Budget Allocation Range | NNB Budget Allocation Range | Incremental Annual Costs to ICD | Total DHS Allocation of BC & BNC

In fact, ICD could deliver additional value that could save money for the nation in tandem with enhancing safety and security: Namely, the Business Plan makes the case that a coordinated "end-to-end" solution for Emergency Management can elevate the productivity and service delivery capability of all segments. From this perspective, using ICD as a platform to help deliver the new DHS mission could actually save money, and simultaneously yield both greater efficiency and effectiveness in National Emergency Management.

Without over-stating the "rigor" of the above calculation, we believe it is reasonable to assume that the true annual cost of ICD to the nation is in fact a maximum of $85M/yr., representing actual total cash and non-cash costs, and pragmatically more like $30-40M/yr., taking into account overlapping strategic values that ICD can deliver. The Benefit/Cost assessment in Section VIII incorporates the full $85M/yr. operating cost for ICD (cash budget plus non-cash amortization) for conservatism, to include all ICD costs whether or not contributing to currently-planned DHS activities.
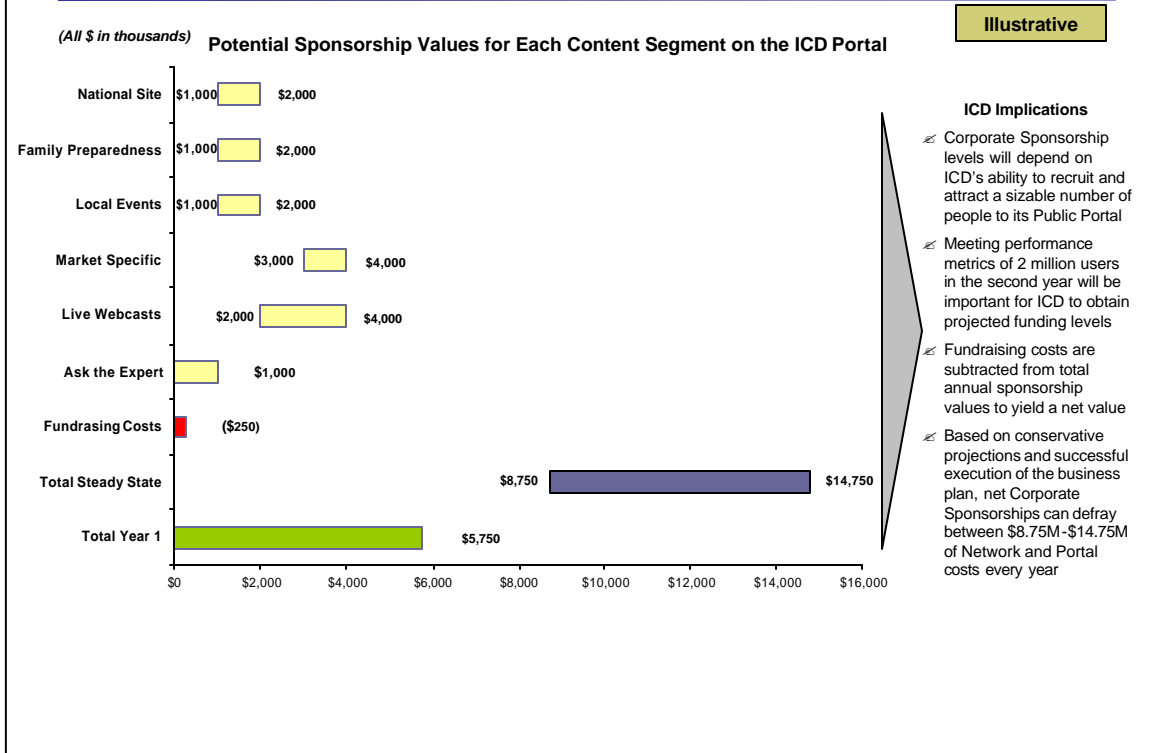
VII. Achieving a Mix of Public and Private Funding for ICD

We also believe there is a strong case that the Corporate sector will be ready and willing to fund a portion of ICD operations, and that these corporate-derived funds could fill a significant part of the operating budget of Neighborhood Network Building. Because of its public education mission, Neighborhood Network Building appears to be the right segment of ICD to attract corporate interest. Large corporations should be willing to support ICD as a gesture of patriotism and good citizenship, as well as for solid economic reasons. A successful ICD can materially help to create more cohesive communities; and to help protect employees, critical productive infrastructure, and international business operations. Reciprocally, ICD can benefit from corporate support beyond the dollars involved, to show national solidarity in the fight against terrorism and broad concern for mitigating disasters.

Corporate Sponsorships can take several forms. In general, corporations would receive tasteful, low-key but visible recognition – much as when Texaco supports the Metropolitan Opera, or corporations support major museums or National Public Radio. Figure 7-1 shows one potential structure of corporate sponsorships: Major sponsorships of $1-2M/yr.encompass the primary Public Portal content presentations on National/International events; Family Preparedness; and Local events; plus four sponsorships of $750k-$1M/yr. each for each of the Market Segment features (covering Business, Health & Healthcare, Not-for-profits, and Government). Additional sponsorships would back four annual live webcasts at $500k-1M per program, for a total of $2-4M; plus four annual "Ask the Expert" broadcasts at $250k each, for a total of $1M. Subtracting out fundraising costs of around $250k/yr. yields total corporate sponsorships of $8.75-$14.75M/yr. A reasonable first-year target could be $6M (less fundraising costs).

Corporate Sponsorships could be Instituted for Major Content Modules of Public Portal, including "Live" Events

Figure 7-1

Illustrative

(All $ in thousands)   **Potential Sponsorship Values for Each Content Segment on the ICD Portal**

Content Segment	Value
National Site	$1,000 — $2,000
Family Preparedness	$1,000 — $2,000
Local Events	$1,000 — $2,000
Market Specific	$3,000 — $4,000
Live Webcasts	$2,000 — $4,000
Ask the Expert	$1,000
Fundrasing Costs	($250)
Total Steady State	$8,750 — $14,750
Total Year 1	$5,750

x-axis: $0, $2,000, $4,000, $6,000, $8,000, $10,000, $12,000, $14,000, $16,000

ICD Implications

- ✍ Corporate Sponsorship levels will depend on ICD's ability to recruit and attract a sizable number of people to its Public Portal
- ✍ Meeting performance metrics of 2 million users in the second year will be important for ICD to obtain projected funding levels
- ✍ Fundraising costs are subtracted from total annual sponsorship values to yield a net value
- ✍ Based on conservative projections and successful execution of the business plan, net Corporate Sponsorships can defray between $8.75M-$14.75M of Network and Portal costs every year
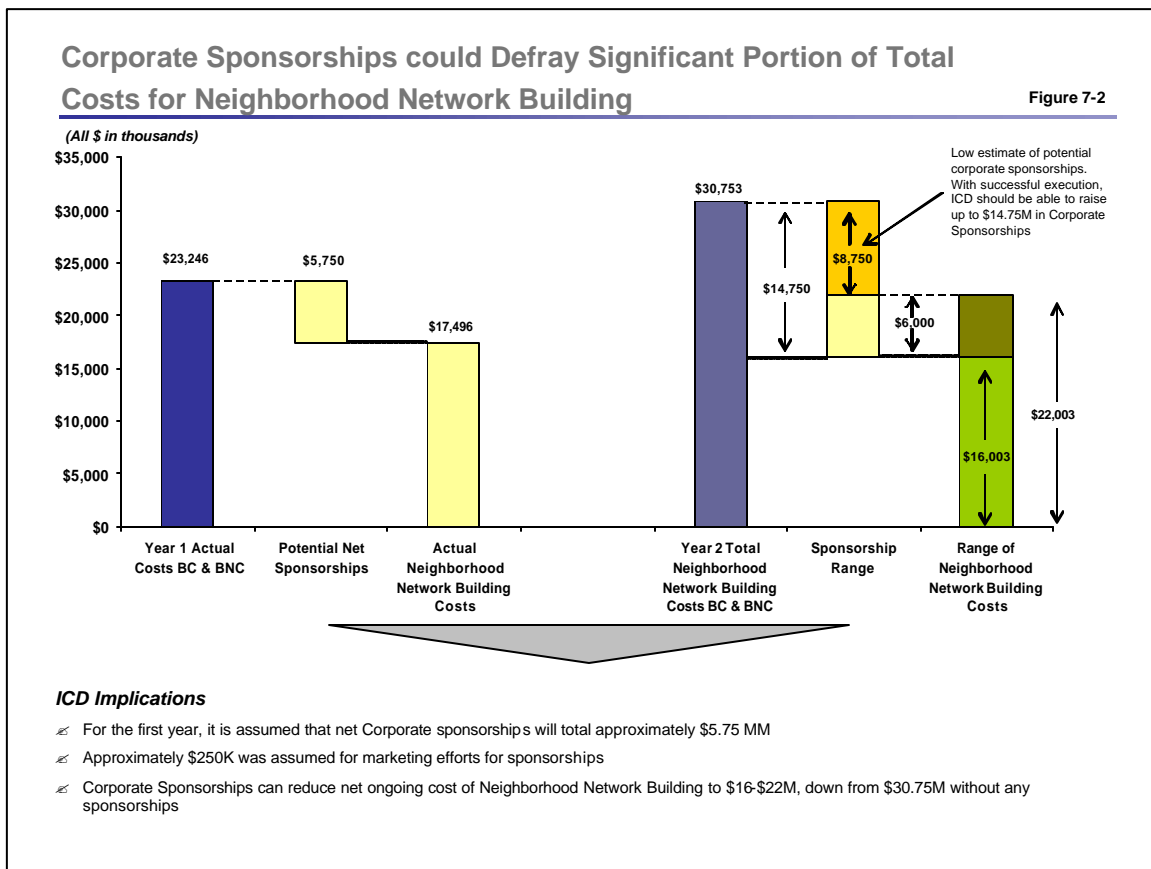
For example, companies like ExxonMobil, BP-Amoco, GE, or IBM, with global operations and consequent interests, could be excellent candidates for sponsorship of National & International events and interpretation. Health care companies like Merck, Pfizer, or Johnson & Johnson would be prime candidates to sponsor Family Preparedness content, or the Health & Healthcare features. Large Insurance Companies (including re-insurers) are additional candidates for sponsorships, because they would benefit from contained risks and lower resulting net worth exposure; for example, both Life Insurance companies and Property & Casualty companies should be beneficiaries of ICD – and should, therefore, be willing to serve as strong Sponsors and proponents.

We emphasize that while businesses will likely volunteer sponsorships during ICD's inaugural year out of a spirit of good citizenship, achieving the kind of sponsorship levels described above will require meeting ICD's target of approximately 2M users in the second year of operation. If ICD can meet and eventually surpass these numbers, corporate sponsorships can become a sound business investment for the sponsors, beyond positive public relations value.

There are additional opportunities for corporate support that are worth pursuing. For example, Section IV calculated over $17M/yr. in annual database license fees – fully 20% of the total ICD operating budget – plus several million $ in computers and networking equipment. With support from ARC and FEMA/DHS in approaching vendors, ICD could obtain price concessions well beyond normal commercial discounts in exchange for corporate sponsor-type benefits – such as identifying a particular vendor

as the "Leading Database Provider to ICD." Candidates for such "Goods-in-kind" sponsorships could include IBM, Oracle, HP, or Accenture or other leading IT service providers (for example, in exchange for portal development services).

Figure 7-2 shows the net result of attracting corporate sponsorships at the annual levels quoted above. For example, Year 2 net operating costs of the Neighborhood Network Building would be reduced from approximately $31M/yr. to between $16 - $22M – a reduction of up to 50%. Year 1 net operating costs would be cut from $23.2M to around $17.5M, also a significant help to finance ICD operations. The remaining ICD budget for all three segments would need to come out of governmental sources (potentially, supplemented by some donations and Foundation support). While ICD can be argued to be a "national responsibility," we believe it would send a very positive message for corporations to support National Preparedness, vs. allowing further increases in government deficits.

Corporate Sponsorships could Defray Significant Portion of Total Costs for Neighborhood Network Building

Figure 7-2

(All $ in thousands)

Low estimate of potential corporate sponsorships. With successful execution, ICD should be able to raise up to $14.75M in Corporate Sponsorships

ICD Implications

- ✍ For the first year, it is assumed that net Corporate sponsorships will total approximately $5.75 MM
- ✍ Approximately $250K was assumed for marketing efforts for sponsorships
- ✍ Corporate Sponsorships can reduce net ongoing cost of Neighborhood Network Building to $16-$22M, down from $30.75M without any sponsorships

VIII. ICD Benefit/Cost

What is the value of having an ICD system in relation to its cost? This is a crucial question to ask, because ICD is ultimately an "investment" in public safety and security, not an "expense" per se.

We can use the "hard" budget numbers from the above sections to quantify ICD's cost. Quantifying ICD value depends on "softer" calculations about what costs could be avoided through more effective and timely disaster mitigation and deterrence.

Let's start with the cost side. We can bound ICD's lifetime cost as shown in Figure 8-1:

1. Start with ICD up-front capital costs of just over $24M

2. Calculate the annual net operating cost for ICD and convert into an "annuity" value – meaning a lifetime net present value (NPV) of the operating cost stream. ICD annual operating cost ranges from $26-$85M depending on whether we count all costs, or attribute a portion to "Base Case" DHS expenses (refer back to Section VI for explanation and calculation; in particular, Figure 6-1). Conservatively attributing only IFC cost to DHS, incremental ICD cost is approximately $43M/yr. Further, let's suppose corporate sponsorships average $10M/yr., toward the low end of the target range in Section VII. Therefore, net ICD costs range from $33.1-75.8M/yr. We can convert this annual cost into an annuity value by dividing by a "social discount rate," representing the target return on comparable national investments in infrastructure (such as bridges and roads), national defense, education, environmental health & safety, and the like. Conservatively using a social discount rate of 10%/yr. yields annuity costs for ICD of $331-758M.

3. Adding the up-front capital costs yields total lifetime ICD costs of $356-783M. (Note this calculation assumes no ongoing growth in ICD expense beyond Year 2, but also uses a conservative social discount rate, which tends to raise the lifetime cost estimate for ICD.)
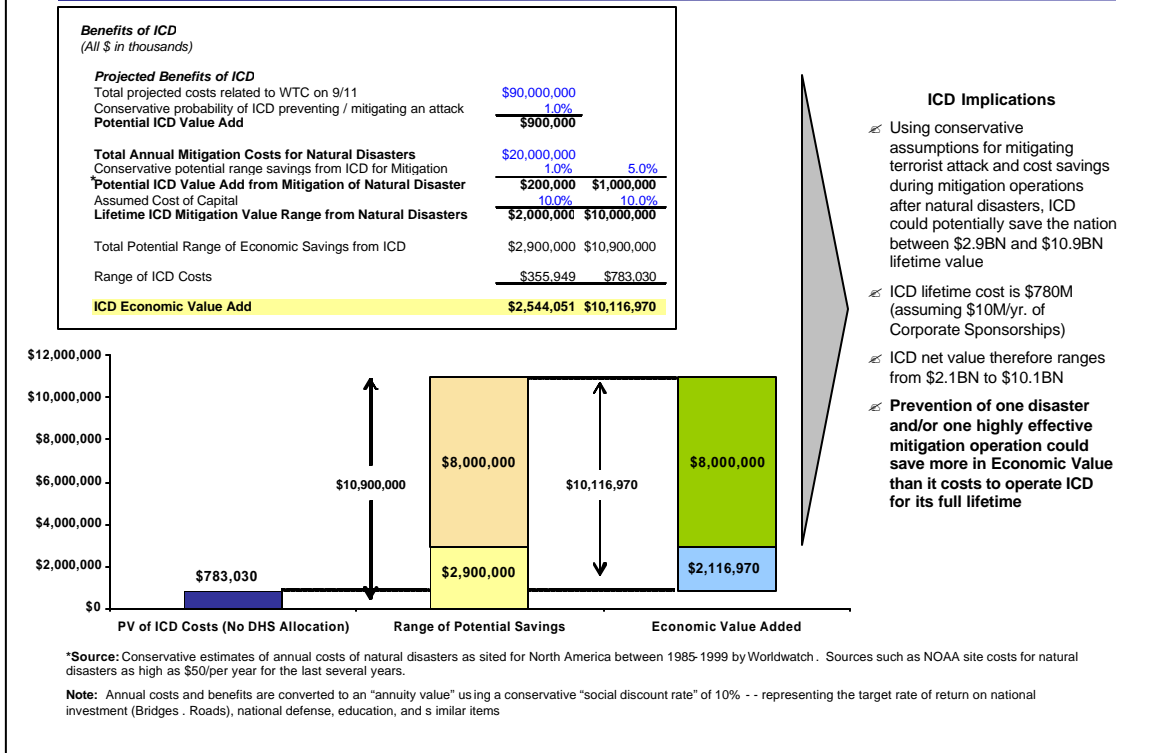
Incremental Lifetime Costs of ICD

Figure 8-1

(All $ in thousands)

Total ICD Costs

Total Upfront Costs	**$24,590**	
(1) Total BC & BNC Cost Range	$43,136	$85,844
(2) Total Corporate Sponsorships	$10,000	$10,000
Total Range of Ongoing Costs	**$33,136**	**$75,844**
(3) Assumed Cost of Capital	10.0%	10.0%
Annuity Value of Ongoing Costs	**$331,360**	**$758,440**
Lifetime Value of Capital and Ongoing Costs	**$355,949**	**$783,030**

Notes:
(1) Range of costs equal Incremental costs of ICD after full allocation of IFC only to DHS on the low end to the full value of ongoing ICD costs at the high end.
(2) Corporate Sponsorships assumed to be towards the low end of the projected range of $9-15M/yr. (see Figure 7-1)
(3) Cost of Capital equals the assumed social discount rate of 10%; used to calculate Present Value of lifetime costs of ICD, assuming permanent operation at the year 2 Operating Budget level.

We believe it's much harder to quantify the precise value of ICD benefits, so the best practice is be both illustrative and conservative with respect to claimed benefits. Figure 8-2 shows a calculation logic to bound potential ICD benefits – assuming, of course, that the ICD system grows to encompass at least 2M users as intended.

Figure 8-2

ICD System could deliver major Social and Economic Benefits, even if Disaster Mitigation is only improved 1%

Benefits of ICD
(All $ in thousands)

Projected Benefits of ICD

Total projected costs related to WTC on 9/11	$90,000,000	
Conservative probability of ICD preventing / mitigating an attack	1.0%	
Potential ICD Value Add	**$900,000**	
Total Annual Mitigation Costs for Natural Disasters	$20,000,000	
Conservative potential range savings from ICD for Mitigation	1.0%	5.0%
*Potential ICD Value Add from Mitigation of Natural Disaster	$200,000	$1,000,000
Assumed Cost of Capital	10.0%	10.0%
Lifetime ICD Mitigation Value Range from Natural Disasters	**$2,000,000**	**$10,000,000**
Total Potential Range of Economic Savings from ICD	$2,900,000	$10,900,000
Range of ICD Costs	$355,949	$783,030
ICD Economic Value Add	**$2,544,051**	**$10,116,970**

ICD Implications

- Using conservative assumptions for mitigating terrorist attack and cost savings during mitigation operations after natural disasters, ICD could potentially save the nation between $2.9BN and $10.9BN lifetime value
- ICD lifetime cost is $780M (assuming $10M/yr. of Corporate Sponsorships)
- ICD net value therefore ranges from $2.1BN to $10.1BN
- **Prevention of one disaster and/or one highly effective mitigation operation could save more in Economic Value than it costs to operate ICD for its full lifetime**

Chart values:
- PV of ICD Costs (No DHS Allocation): $783,030
- Range of Potential Savings: $10,900,000 / $8,000,000 / $2,900,000
- Economic Value Added: $10,116,970 / $8,000,000 / $2,116,970

Y-axis: $0 to $12,000,000

*Source: Conservative estimates of annual costs of natural disasters as sited for North America between 1985-1999 by Worldwatch. Sources such as NOAA site costs for natural disasters as high as $50/per year for the last several years.

Note: Annual costs and benefits are converted to an "annuity value" using a conservative "social discount rate" of 10% -- representing the target rate of return on national investment (Bridges. Roads), national defense, education, and similar items

Suppose that ICD can help mitigate major disasters by just 1%. Figure 8-2 illustrates two potential sources of value. Annual cost of disasters in the U.S. is around $20B/yr. (Sources: WorldWatch Institute, NOAA, and CBO). In fact, the cost is probably greater than that including lost economic activity, plus the "economic drag effect" of higher insurance and security costs; but take $20B as a base level of cost. If faster and more effective mitigation via ICD can reduce that cost by 1%, that's worth $200M/yr., or $2B in lifetime value (using a 10%/yr. social/economic discount rate to calculate a Net Present Value of benefits). At the high end, 5% lower cost of mitigation would be worth $10B in net present value.

Similarly, consider the WTC tragedy due to terrorist action. As reported in the ICD Feasibility Study, the all-in cost of that disaster already exceeds $90B, and will almost certainly climb above $100B – even without counting all the economic losses and the psychological damage done to individuals and to society. A 1% savings for that one-time event, whether through deterrence or more effective mitigation, is worth $900M.

Adding the above numbers suggests that an effective ICD system, mobilizing at least 2M and ideally 5-10M "eyes" to the cause of disaster mitigation, could be worth at least $2.9B and up to $10.9B. Compared to high-end estimate of $780M for ICD lifetime cost, ICD could generate very strong benefit/cost ratio.

Another validation of ICD benefit/cost comes from looking at specific types of dispersed threats where an in-place ICD system could materially boost early detection and

mitigation. For example, in October, 2001, the State of Indiana developed a mock exercise in which three large farms were infected with a highly infectious disease similar to foot and mouth. Containment costs for the simulated exercise ran $14M. But industry losses were a much larger $709M (Souce: National Council of State Legislatures *LegisBrief*, June/July 2002). Significantly, the total dollar impact, $723M, of this one, limited-scope episode is close to the full lifetime cost of the ICD system – indicating that success in detecting and mitigating one major threat could cost-justify permanent operation of an ICD system.

The above methodologies can unquestionably be improved with experience; and our estimates need to challenged and refined via professional peer review. However, based on the best information available, our analysis suggests that ICD can be a very cost effective and attractive investment for the Nation to help produce a safer, more resilient society, plus richer and more robust capabilities for Emergency Management. Ultimately, a safer, more secure society will be better able to channel its talents, resources and energies into economic growth and community development.

IX. Cost of Pilot Projects

Figure 9-1 summarizes the key assumptions for the Pilot Program scenarios. We assume that the Pilot will result in fully-operative Neighborhood Network Building (including the Public Portal for public education, recruiting, and Fear Management); a fully-operative, but scaled-down MOC; and a "virtual" IFC staffed by 3 FTE personnel operating out of their current locations (from a combination of FEMA and other Agencies). Pilot duration is either 6 months or 9 months of full running time, preceded by a 3-month planning and set-up period (for example, to create the initial version of the Public Portal). We further assume that the Pilot City will be able to provide some level of "in kind" resources to support the Pilot Project and defray out-of-pocket costs. These in-kind contributions are most likely to be in-place resources with some slack capacity to leverage over the Pilot Program – such as Call Center Operators, System Administrators, Network servers, and the like.

Pilot Program Overview   Figure 9-1

- o **Neighborhood Network Building** will be accomplished through field recruiting and the Public Portal

- o A full but small scale **Mitigation Operation Center** will be set up in the Pilot City

- o A **"Virtual" Information Fusion Center** is assumed to be housed with 3 FEMA analysts who will stay in their current locations, but will devote 100% of their time to the Pilot Program

- o Variation on each scenario assumes that some in-kind resources (e.g. System Administrators) will be donated by FEMA and Local Government for the duration of the Pilot

- o Following scenarios assume 3 months of set-up time before operations:

    - ✎ **Scenario A** involves 3 months of set-up plus 6 full months of operation

    - ✎ **Scenario B** involves 3 months of set-up plus 9 full months of operation

---

Figure 9-2 estimates the cost of a 6-month running Pilot program in Scenario A. Total cash cost is between $2.4-2.8M, depending on the level of in-kind contributions from the Pilot City. The largest single expenditures are a total of $1.15M for development of Portals to support Neighborhood Network Building ($800K) and the MOC ($350K). Cost of a Pilot could, therefore be further reduced to the extent that ICD can leverage off the development tools and hosting environment being created for the new FEMA Portal,

Disasterhelp.gov . (Such resource leverage could potentially reduce full-scale implementation costs for ICD as well.)

Projected Pilot Costs for Neighborhood Network Building – 6 Months   Figure 9-2a

Neighborhood Network Building Costs *(All $ in thousands)*	Total Units	Cost / Unit / Yr.	Annual Cost	Cost / 6 Months	In-Kind Contributions Units	In-Kind Contributions Cost	Adjusted Costs
Human Resource Costs							
Operators in the Call Center	4	35	140	70	2	35	35
Content Development & R&D Personnel	1	100	100	50	-	-	50
Marketing & Recruiting Personnel	3	100	300	150	1	50	100
Training Personnel for Fear Management	1	100	100	50	-	-	50
Total Salaries	9		**$640**	**$320**			**$235**
General Recruiting Costs 10.0%			64	64	-	-	64
Total Human Resource Costs			**$704**	**$384**			**$299**
Employee Equipment Costs							
Equipment Cost (Computer, Software, Telecom)	9	1	9	9	5	5	4
Total Security for Equipment 10.0%			0.9	0.9	-	-	0.9
General Telecom Cost / Employee	9	1	9	4.5	-	-	5
Total Employee Equipment Costs			**$19**	**$14**			**$9**
Training / Accreditation / Applications							
Training Programs	1	20	20	20	-	10	10
Application Rollouts	1.0	85	85	85	-	-	85
Security for Programs / Rollouts 10.0%			11	11	-	-	11
Total Training / Accreditation / Application Expenses			**$116**	**$116**			**$106**
Portal Development Costs	1	800	**$800**	**$800**	**-**	**-**	**$800**
Total Neighborhood Network Building Costs			**$1,638**	**$1,314**			**$1,214**

Notes:
1) Assumes that 2 operators can be lent from FEMA or other agencies or Pilot City as potential in-kind contribution.
2) Content Development and R&D, Marketing and Recruiting positions assumed to be joint positions held by 1 and 3 individuals. Assumes that at least 1 individual will be available from FEMA.
3) Employee equipment expenses assumed to be approximately 1/3 of full roll out. Assumes that FEMA / Local government will have equipment for approximately 5 people available for Pilot.
4) General telecom costs assumed to equal approximately $1,000 / employee / year.
5) Training and Application rollouts assumed to be approximately 1/3 of full roll out. Assumed 1 roll out each for the pilot duration. Assumes that FEMA can contribute resources / costs equivalent of approximately ½ of training costs.
6) No maintenance expenses for hardware and software assumed.
7) Hardware and software expenses assumed to be shared with MOC and are laid out in subsequent pages.
8) Assumes that pilot program will roll into existing call center and thus no additional costs allocated to office space, PBX, and other infrastructure items

Projected Pilot Costs for MOC - 6 Months

Figure 9-2b

Mitigation Operation Center Costs (All $ in thousands)		Total Units	Cost / Unit / Yr.	Annual Cost	Cost / 6 Months	In-Kind Contributions Units	Cost	Adjusted Costs
Human Resource Costs								
Operators in the Call Center		4	75	300	150	2	75	75
Network Maintenance		4	50	200	100	2	50.0	50
Total Employee Salaries		8		$500	$250			$125
General Recruiting Costs	10.0%			50	50		25	25
Total Human Resource Costs				$550	$300			$150
Employee Equipment Costs								
Equipment Cost (Computer, Software, Telecom)		8	1	8	8	4	4	4
Total Security for Equipment	10.0%			0.8	0.8	-	-	0.8
General Telecom Cost / Employee		8	1	8	4	-	-	4
Total Employee Equipment Costs				$17	$13			$9
First Responder Training Costs								
Training Development		1	75	75	75	-	37.5	38
Security for Training Applications	10.0%			7.5	7.5	-	-	7.5
Total First Responder Training Costs				$83	$83			$45
Applications								
Application Rollouts		1	75	75	75	-	-	75
Security for Applications	10.0%			7.5	7.5	-	-	7.5
Total Application Costs				$83	$83			$83
Portal Development Costs			$350	$350	$350	-	-	$350
Total MOC Costs				$1,082	$828			$636

Notes:
1) 2 of the 4 for operators and network maintenance personnel are assumed to be lent from FEMA or the Pilot City as potential in-kind contribution.
2) Employee equipment expenses assumed to be approximately 1/3 of full roll out. Assumes that FEMA / Local government will have equipment for approximately 4 people available for Pilot.
3) General telecom costs assumed to equal approximately $1,000 / employee / year.
4) Training rollouts assumed to be approximately 1/3 of full roll out. Assumed 1 roll out each for the pilot duration. Assumes that FEMA will be able to contribute ½ of the resources / costs for training development.
5) Applications rolled out from MOC will be on smaller scale and magnitude than for national rollout. Original application projection was $1.0 MM.
6) No maintenance expenses for hardware and software assumed.
7) Hardware and software expenses assumed to be shared with Neighborhood Network Building and are laid out in subsequent pages.
8) Assumes that pilot program will roll into existing call center and thus no additional costs allocated to office space, PBX, and other infrastructure items

Projected Shared Expenses and Total Pilot Costs – 6 Months

Figure 9-2c

(All $ in thousands) Shared Resources		Total Units	Cost / Unit / Yr.	Annual Cost	Cost / 6 Months	In-Kind Contributions Units	In-Kind Contributions Cost	Adjusted Costs
General Hardware / Software Expenses								
Application Servers		5	5	25	25	2	10	15
Network Servers		5	5	25	25	2	10	15
Security for Network Servers	10.0%			2.5	2.5	-	-	2.5
Oracle Database Setup Costs		1	75	75	75	-	37.5	37.5
Database License Costs		10	10	100	50		25.0	25
Total Hardware / Software Expenses				**$228**	**$178**			**$95**
Systems Administrator		1	100	100	50	1	50	0
General & Administrative				100	50		25.0	25
Total Neighborhood Network Building & MOC Shared Costs				**$428**	**$278**			**$120**
Additional Expenses - GHNet								
Consulting Fees				360	360	-	-	360
Travel & Telecom Costs				50	50	-	-	50
Total Additional Expenses				**$410**	**$410**			**$410**

Breakdown of Pilot Expenses	Annual Cost	Cost / 6 Months	In-Kind Contributions Units	In-Kind Contributions Cost	Adjusted Costs
Neighborhood Network Building Expenses	1,638	1,314	-	100	1,214
MOC Expenses	1,082	828	-	192	636
Shared Expenses	428	278	-	158	120
Additional Expenses	410	410	-	-	410
Total Pilot Expenses	**$3,558**	**$2,829**			**$2,380**

Notes:

1) Assumes that general hardware and software (servers and databases) will be shared between MOC and Neighborhood Network Building. Of those, assumes that 2 App servers and network servers will be available from local government resources.

2) Assumes that 1 network administrator will be able to maintain both Neighborhood Network Building and MOC systems, which could be a shared resource from FEMA / Local Government

Figure 9-3 illustrates that a 9 month-running Pilot Program raises the total cost to $2.8-$3.4M. The relatively high level of fixed cost, especially for portal development and deployment, means that total Pilot costs rise much less than proportionate to Pilot duration.

Projected Pilot Costs for Neighborhood Network Building – 9 Months   **Figure 9-3a**

Neighborhood Network Building Costs *(All $ in thousands)*		Total Units	Cost / Unit / Yr.	Annual Cost	Cost / 9 Months	In-Kind Contributions Units	In-Kind Contributions Cost	Adjusted Costs
Human Resource Costs								
Operators in the Call Center		4	35	140	105	2	53	53
Content Development & R&D Personnel		1	100	100	75	-	-	75
Marketing & Recruiting Personnel		3	100	300	225	1	75	150
Training Personnel for Fear Management		1	100	100	75	-	-	75
Total Salaries		9		**$640**	**$480**			**$353**
General Recruiting Costs	10.0%			64	64	-	-	64
Total Human Resource Costs				**$704**	**$544**			**$417**
Employee Equipment Costs								
Equipment Cost (Computer, Software, Telecom)		9	1	9	9	5	5	4
Total Security for Equipment	10.0%			0.9	0.9	-	-	0.9
General Telecom Cost / Employee		9	1	9	6.8	-	-	7
Total Employee Equipment Costs				**$19**	**$17**			**$12**
Training / Accreditation / Applications								
Training Programs		1	20	20	20	-	10	10
Application Rollouts		1.5	85	128	128	-	-	128
Security for Programs / Rollouts	10.0%			15	15	-	-	15
Total Training / Accreditation / Application Expenses				**$162**	**$162**			**$152**
Portal Development Costs		1	800	**$800**	**$800**	**-**	**-**	**$800**
Total Neighborhood Network Building Costs				**$1,685**	**$1,523**			**$1,380**

Notes:
1) Assumes that 2 Operators can be lent from FEMA or other agencies or Pilot City as potential in-kind contribution.
2) Content Development and R&D, Marketing and Recruiting positions assumed to be joint positions held by 1 and 3 individuals. Assumes that at least 1 individual will be available from FEMA.
3) Employee equipment expenses assumed to be approximately 1/3 of full roll out. Assumes that FEMA / Local government will have equipment for approximately 5 people available for Pilot.
4) General telecom costs assumed to equal approximately $1,000 / employee / year.
5) Training and Application rollouts assumed to be approximately 1/3 of full roll out. Assumed 1.5 rollouts each for applications and 1 for training for the pilot duration. Assumes that FEMA can contribute resources / costs equivalent of approximately ½ of training costs.
6) No maintenance expenses for hardware and software assumed.
7) Hardware and software expenses assumed to be shared with MOC and are laid out in subsequent pages.
8) Assumes that pilot program will roll into existing call center and thus no additional costs allocated to office space, PBX, and other infrastructure items

Projected Pilot Costs for MOC - 9 Months

Figure 9-3b

Mitigation Operation Center Costs (All $ in thousands)		Total Units	Cost / Unit / Yr.	Annual Cost	Cost / 9 Months	In-Kind Contributions Units	In-Kind Contributions Cost	Adjusted Costs
Human Resource Costs								
Operators in the Call Center		4	75	300	225	2	113	113
Network Maintenance		4	50	200	150	2	75.0	75
Total Employee Salaries		8		$500	$375			$188
General Recruiting Costs	10.0%			50	50		25	25
Total Human Resource Costs				$550	$425			$213
Employee Equipment Costs								
Equipment Cost (Computer, Software, Telecom)		8	1	8	8	4	4	4
Total Security for Equipment	10.0%			0.8	0.8	-	-	0.8
General Telecom Cost / Employee		8	1	8	6	-	-	6
Total Employee Equipment Costs				$17	$15			$11
First Responder Training Costs								
Training Development		1	75	75	75	-	37.5	38
Security for Training Applications	10.0%			7.5	7.5	-	-	7.5
Total First Responder Training Costs				$83	$83			$45
Applications								
Application Rollouts		1	75	75	75	-	-	75
Security for Applications	10.0%			7.5	7.5	-	-	7.5
Total Application Costs				$83	$83			$83
Portal Development Costs			$350	$350	$350	-	-	$350
Total MOC Costs				$1,082	$955			$701

Notes:
1) 2 of the 4 for operators and network maintenance personnel are assumed to be lent from FEMA.
2) Employee equipment expenses assumed to be approximately 1/3 of full roll out. Assumes that FEMA / Local government will have equipment for approximately 4 people available for Pilot.
3) General telecom costs assumed to equal approximately $1,000 / employee / year.
4) Training rollouts assumed to be approximately 1/3 of full roll out. Assumed 1 roll out each for the pilot duration. Assumes that FEMA will be able to contribute ½ of the resources / costs for training development.
5) Applications rolled out from MOC will be on smaller scale and magnitude than for national rollout. Original application projection was $1.0 MM.
6) No maintenance expenses for hardware and software assumed.
7) Hardware and software expenses assumed to be shared with MOC and are laid out in subsequent pages.
8) Assumes that pilot program will roll into existing call center and thus no additional costs allocated to office space, PBX, and other infrastructure items

Projected Shared Expenses and Total Pilot Costs – 9 Months

Figure 9-3c

(All $ in thousands) **Shared Resources**	**Total Units**	**Cost / Unit / Yr.**	**Annual Cost**	**Cost / 9 Months**	**In-Kind Contributions** **Units**	**Cost**	**Adjusted Costs**
General Hardware / Software Expenses							
Application Servers	5	5	25	25	2	10	15
Network Servers	5	5	25	25	2	10	15
Security for Network Servers (10.0%)			2.5	2.5	-	-	2.5
Oracle Database Setup Costs	1	75	75	75	-	37.5	37.5
Database License Costs	10	10	100	75		37.5	38
Total Hardware / Software Expenses			**$228**	**$203**			**$108**
Systems Administrator	1	100	100	75	1	75	0
General & Administrative			100	75		37.5	38
Total Neighborhood Network Building & MOC Shared Costs			**$428**	**$353**			**$145**
Additional Expenses - GHNet							
Consulting Fees			490	490	-	-	490
Travel & Telecom Costs			65	65	-	-	65
Total Additional Expenses			**$555**	**$555**			**$555**

Breakdown of Pilot Expenses	**Annual Cost**	**Cost / 9 Months**	**In-Kind Contributions** **Units**	**Cost**	**Adjusted Costs**
Neighborhood Network Building Expenses	1.685	1.523	-	143	1.380
MOC Expenses	1.082	955	-	254	701
Shared Expenses	428	353	-	208	145
Additional Expenses	555	555	-	-	555
Total Pilot Expenses	**$3,749**	**$3,385**			**$2,781**

Notes:

1) Assumes that general hardware and software (servers and databases) will be shared between MOC and Neighborhood Network Building. Of those, assumes that 2 App servers and network servers will be available from local government resources.

2) Assumes that 1 network administrator will be able to maintain both Neighborhood Network Building and MOC systems, which could be a shared resource from FEMA / Local Government

In summary: These estimates suggest that a fully-fleshed out Pilot Program, running either 6 or 9 mo. from start-up, should be achievable for $3M or less cash outlay. Such duration should be ample to test the attainable growth in the ICD network during a start-up year. Moreover, this duration should also be sufficient to demonstrate the potential value of ICD to the community, following on the Pilot Objectives framework developed in Section XI of the ICD Feasibility Study. Once the primary fixed costs have been incurred, a second Pilot program could be run for $2M or less, if desired, prior to national roll-out of ICD.

Appendix 1. Assumptions for ICD Cost Model

Portal Development Assumptions & Sources

Portal Development Assumptions and Sources:

1) Costs associated with call center operators & neighborhood network maintenance personnel derived from total estimated network size and activity for Year 1 and Year 2 and average operator call capacity. Figures for projected network members based on ICD team research and GHNet experience. Also assumed that network is in crisis mode 25% of the time with the remaining 75% representing steady-state operations. During crisis, assumed that call center activity will surge 3X steady state levels & network maintenance personnel will surge 3X steady state levels

2) Personnel related to IT Support, Content Development, R&D, Marketing, Public Education, and Network Recruitment based on projected network growth/size and application development estimates; productivity estimates (ability of operators / network maintenance personnel to handle x amount of email / calls per day, ability to handle IT support functions, and etc.) derived from discussions with ARC and other private organizations

3) General recruiting costs assumed to be 10% of employees fully loaded salaries.

4) General employee equipment and software expenses derived from conversations with IT personnel at ARC and other private organizations.

5) General Telecom expenses estimated from conversations with personnel from ARC's national call center.

6) Network server requirements and costs estimated from discussions with ARC's IT personnel and personnel from other private organizations.

7) Database cost and requirements estimated based on conversations with professionals from Oracle, IT personnel from ARC and other private organizations.

8) Office space requirements based on estimates from ARC's national call center and market research.

9) Training & Accreditation programs and Application rollouts equal estimated goals for Year 1 and Year 2 for ICD.

10) Public Portal development & maintenance expenses based on conversations with IT personnel at ARC, independent website developers and programmers, and other private IT organizations

11) Cost & Maintenance for PBX system based on conversations with ARC IT Personnel.

12) Other General & Administrative costs assumed to be approximately 15% of total employee salaries with an additional 4% for employee training purposes; plus additional promotional costs of $500K.

13) Other assumptions include 10% of Hardware costs for all IT Security & 20% for all maintenance expenses. These figures were estimated based on conversations with IT personnel at FEMA and other private organizations. FEMA IT personnel suggested as a rule of thumb 10% in incremental security costs for all IT.

14) Depreciation & Amortization period on hardware assumed to 3 years based on general IT equipment useful lifespan.

Information Fusion Center Assumptions & Sources

Information Fusion Center Assumptions and Sources

1) Analyst salaries and development figures based on projected network growth and activity. Also assumed that network is in crisis mode 25% of the time with the remaining 75% representing steady state operations. During crisis, assumed that analyst activity & requirements will surge 2X steady state levels.

2) Personnel related to IT Support based on discussions with IT personnel from ARC and other private organizations.

3) General recruiting costs assumed to be 10% of employees fully loaded salaries.

4) General Telecom expenses estimated from conversations with personnel from ARC's national call center.

5) General employee equipment and software expenses derived from conversations with IT personnel at ARC and other private organizations.

6) Dedicated analysts network requirements based on estimated cost for providing secure, high bandwidth connection for analysts.

7) Network server requirements and costs estimated from discussions with ARC's IT personnel and personnel from other private organizations.

8) Database cost and requirements estimated based on conversations with professionals from Oracle, IT personnel from ARC and other private organizations.

9) Data mining and P2P tools are resource estimates for Analysts.

10) Office space requirements based on estimates from ARC's national call center and market research plus general research.

11) Interagency Integration Costs based on market research on Application Integration providers, project integrations, and ongoing maintenance requirements.

12) Application costs based on ICD estimates of application rollouts and development costs

13) Portal development & maintenance expenses based on conversations with IT personnel at ARC, independent website developers and programmers, and other private IT organizations

14) Cost & Maintenance for PBX system based on conversations with ARC IT Personnel.

15) Other General & Administrative costs assumed to be approximately 10% of total employee salaries, since IFC personnel have higher compensation levels than Public Portal, with an additional 4% for employee training purposes.

16) Other assumptions include 10% of Hardware costs for all IT Security & 20% for all maintenance expenses. These figures were approximate estimates based on conversations with IT personnel at FEMA and other private organizations. FEMA IT personnel suggested as a rule of thumb 10% in incremental security costs for all IT.

17) Depreciation & Amortization period on hardware assumed to 3 years based on general IT equipment lifespan.

18) Integration costs based on discussions with Mercator Software and other vendors, plus general industry experience

Mitigation Operation Center Assumptions & Sources

Mitigation Operation Center Assumptions and Sources

1) MOC operator salaries and development figures based on projected network growth and activity. Also assumed that network is in crisis mode 25% of the time with the remaining 75% representing steady state operations. During crisis, assumed that Operator activity & requirements will surge 5X steady state levels.

2) Personnel related to IT Support based on discussions with IT personnel from ARC and other private organizations. Long-Term Health Tracking personnel costs based on ICD estimates.

3) General recruiting costs assumed to be 10% of employees fully loaded salaries.

4) General employee equipment and software expenses derived from conversations with IT personnel at ARC and other private organizations.

5) General Telecom expenses estimated from conversations with personnel from ARC's national call center.

6) Network server requirements and costs estimated from discussions with ARC's IT personnel and personnel from other private organizations.

7) Database cost and requirements estimated based on conversations with professionals from Oracle, IT personnel from ARC and other private organizations.

8) Office space requirements based on estimates from ARC's national call center and market research.

9) First responder training & maintenance costs based on ICD estimates.

10) Application costs based on ICD estimates of application rollouts and development costs

11) Portal development & maintenance expenses based on conversations with IT personnel at ARC, independent website developers and programmers, and other private IT organizations

12) Cost & Maintenance for PBX system based on conversations with ARC IT Personnel.

13) Other General & Administrative costs assumed to be approximately 15% of total employee salaries, with an additional 4% for employee training purposes.

14) Other assumptions include 10% of Hardware costs for all IT Security & 20% for all maintenance expenses. These figures were approximate estimates based on conversations with IT personnel at FEMA and other private organizations. FEMA IT personnel suggested as a rule of thumb 10% in incremental security costs for all IT.

15) Depreciation & Amortization period on hardware assumed to 3 years based on general IT equipment lifespan.